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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Our Overseas Trade

THE Board of Trade returns just issued contain, in addition to the usual monthly statistics, the complete figures of overseas trade for the past year, with the corresponding totals for 1923 and 1924, and enable some broad comparisons to be made over this period. The total volume of overseas trade for 1925 again shows an increase, but the increase is confined to imports and re-exports. The recorded values of exports and re-exports actually reveal a small decrease on 1924, even after allowing for a big expansion of re-exports, largely attributable to rubber. Below we give the figures (in thousands) for the past six years, with the Board of Trade average wholesale price index:

Year.	Imports.	Exports and Re-exports.	Total Trade.	Price Index Number.
	£	£	£	
1920	1,936,742	1,557,975	3,494,717	307
1921	1,086,687	810,248	1,896,935	197
1922	1,003,099	824,273	1,826,372	159
1923	1,098,016	885,901	1,983,917	159
1924	1,279,844	935,514	2,215,358	166
1925	1,332,858	927,497	2,260,355	161

It will be seen that from 1920 to 1925, while the price level has fallen by nearly 50 per cent., the recorded value of total trade has fallen by only 35 per cent., so that there has been a real increase in volume of trade equal to this difference. As compared with 1922, when the trade depression reached its lowest point, there was in 1925 an increase of nearly 24 per cent. in total volume of trade, nearly all of which is a real increase, since the average price level in 1925 was only 1¼ per cent. higher. In the above table the figures shown for 1924 are outstanding among those of recent years by reason of the higher price level prevailing during that year, this being 3 per cent. above that of 1925. Calculating, therefore, the 1924 figures in terms of 1925 prices, the resultant comparison of actual volumes indicates that during the past year imports have increased by approximately £91,000,000 and the combined exports and re-exports have increased by £20,000,000. The last result must not, however, be allowed to obscure the fact that the actual volumes of purely British export trade have decreased by about £4,000,000.

The figures relating to chemicals, drugs, dyes and colours agree to a large extent with the general trade movement. The imports are lower than a year ago but higher by nearly a million sterling than in 1923. The United Kingdom exports are down by nearly two millions on 1924 and by over two millions on 1923. The exports of imported merchandise are lower than in 1924 but higher than in 1923. On the whole, the position in 1925 may be described as not quite so good as in 1924, but distinctly better than in 1923.

Ethylene Glycol Tests

As a good deal of interest seems to have been taken in the remarks that appeared in our issue of January 2 in connection with the use of ethylene glycol as an anti-freeze mixture, our readers will probably be glad to know of a report on this substance, as well as on alternative compounds, which has just been issued by the United States Bureau of Standards. The report leaves the impression that the claims made for ethylene glycol are fully warranted, and some interesting data are included which should prove a safe guide in preparing radiator solutions in accordance with the minimum temperatures likely to be experienced in any particular country or district. The opinion, moreover, is expressed that glycerine and glycol solutions are superior to the other substances commonly used by reason of the fact that they boil at temperatures only slightly above the boiling point of water, while solutions of denatured or wood alcohol boil at considerably lower temperatures. Accordingly, the use of glycol permits of normal engine operation in winter, and since it is not subject to loss by evaporation, one charge should suffice for

many months. Among the other substances which were tested by the Bureau of Standards were denatured alcohol, distilled glycerine, and methanol, and in view of the extent to which the last-named has been in the public eye of late, it is instructive to find that a note of warning is issued against its promiscuous use for the purpose, for it may be found to contain free acid, which will eventually lead to corrosion. The same applies to glycerine, as this in the crude form may contain electrolytes and give rise to similar damage.

German Chemical Policy

THE New Year issue of *Chemiker-Zeitung*, now entering its 50th year of publication, contains a message to its readers that is characteristic of the spirit in which German industrialists are facing present day problems. "Everyone," the journal states, "whether employer or workman must recognise that the times are very critical and that it is more than ever necessary to work and not despair. In the difficult struggle ahead the chemical industry can and will come safely through by applying itself to scientific research and achieving yet greater technical and economic success."

In reviewing the achievements of the past year it is considered that 1925 marks a turning point in the development of German chemical enterprise. Interests hitherto competitive have now been merged under the management of the Badische Anilin and Soda Co. with a nominal capital of 650,000,000 marks. German opinion is that this amalgamation will give a new stimulus to the industry and enable it once more to take its place in meeting world competition. This tendency to form combinations is characteristic of the heavy chemical industry, for an internal arrangement has been made among the German alkali works and a mutual understanding has been concluded with the French alkali industry as regards exports. The German iron and steel trades have also arrived at an agreement in assuring co-operation in production, while as recently as November the electro-technical industry has made similar arrangements. It appears that Germany is not only favourable to such combinations on a national scale but expects that these may eventually become a part of the machinery of international trade, and in this connection mention is made of suggestions recently put forward by British mining interests with a view to a reorganisation of production and distribution in the world's markets through the agency of an international coal council.

While the past year has seen this consolidation of the chemical and allied trades in Germany, there have also been developments in scientific research. As is everywhere being recognised at the present time, "chemical research and industrial practice are inseparably associated," and in May 1925 a large museum of science and technology was opened at München. Considerable attention has been given to the study of artificial silk, as in this country, and it is interesting to note that among the most important questions of the moment the first places are given to the corrosion of iron and steel and the future of liquid fuels. "It is necessary to remember," the journal concludes, "that the problems of the coming years are likely to be as pressing as those of the present and production must therefore be directed with the utmost thought. Germany must strive from sheer necessity to regain her former position if the work of to-day is to merit the thanks of future generations."

Cheap Hydrogen

THE papers, of which a notice appeared in our last issue, read at the meeting of the Chemical Engineering Group at Burlington House last week were, as the chairman (Mr. C. S. Garland) pointed out, of more than ordinary interest. They possibly foreshadowed the time when the world may be able to conduct its activities without the use of fuel, and we may even see the conversion of certain forms of cellulose into food products. Apart from the future, the generation of cheap hydrogen is of fundamental importance to-day. Not only does it figure in the manufacturing costs of synthetic ammonium sulphate to the extent of about 60 per cent., but the success of the Bergius process for producing fuel oils from certain qualities of coal depends largely on a supply of cheap hydrogen, as does also the economical manufacture of methyl and butyl alcohols.

It is obvious that the application of the electrolytic process for the production of hydrogen is limited to certain conditions. Where it is found impossible to utilise the oxygen simultaneously released with the hydrogen, considerations of cost may militate somewhat against its adoption, although, as an exception to this general statement, Mr. Knowles announced that he is now erecting a large plant at Pierrefitte, in the French Pyrenees, where the electrolytically-produced hydrogen is to be used for the production of synthetic ammonia. In this case no attempt is at present to be made to recover the oxygen. Clearly, where the oxygen can be recovered and advantageously utilised, the cost of hydrogen will be sensibly lowered. Indeed, it is difficult to conceive of electrolytically-produced hydrogen competing with that produced by the water gas or steam-iron process, except for the abnormally high price of coke. True, the hydrogen generated by the Knowles process possesses a greater degree of purity. Oxygen alone is the only impurity, and although it is an inhibiting agent, when regarded from the point of view of synthesising ammonia from nitrogen and hydrogen, it can easily and effectively be removed. The impurities accompanying the hydrogen generated by the other two processes are carbon monoxide, nitrogen and sulphur compounds. Obviously, the purification plant is more complicated and the expenses of purification greater than with the Knowles process.

It is essential to use distilled water when producing hydrogen by the electrolytic method, and the economical production of distilled water was rightly raised during the discussion. Dr. Ormandy referred to a process being worked in Germany to-day where use is made of an electric current instead of resorting to distillation. Dr. Bolton, in emphasising the necessity for hydrogenation being effected continuously, instead of by the batch method, suggested that the Knowles process only required two things—one was a continuous and automatic recording device for the purity of the water and the other a recorder for

indicating the purity of the hydrogen. It was pointed out that in the usual Knowles installations the purity of the water is determined by its resistance. Actually, a delicate ammeter, registering in terms of milli-amps, is used, and with a satisfactory water it is usual to get a registration of 0·3 milli-amps. So successful is this device that the least impurity increases the milli-amperage. Normally, the impurity (oxygen) associated with the hydrogen is not measurable in the ordinary apparatus, where combustion by means of heated platinum is effected. It can only be detected by phosphorus.

Dr. A. C. Thaysen's paper on "The production of hydrogen by micro-organisms" was very interesting. From a study of the paper and the discussion it is evident that the science of fermentation covers a very wide field, that there are many avenues yet to be explored, and that an organised study of the activities of micro-organisms may result in a great advance in industrial chemistry.

Potash Propaganda by Film

A CINEMA film, which has been described as equivalent to a series of college lectures on the subject, has just been completed under the direction of Mr. G. A. Cowie, M.A., B.Sc., F.I.C. (chief agricultural adviser to the Potash Syndicate). It was shown privately in London last week, and it is to be exhibited to various branches of the National Farmers' Union. This film, the first of its kind, depicts with remarkable clearness, not only the prominent scientific features of the classical and other official experimental plots relating to the improvement of grass and arable crops, but also the practical lessons of these experiments. The comprehensiveness of the film may be judged by the fact that nearly all the agricultural experimental stations in Great Britain have been visited to secure some manurial feature or other for incorporation in the film. Obviously great care has been taken to present the subjects in such an order as to give the spectator the clearest insight possible into the broad principles which should govern manurial practice. The film covers the general subjects of manuring for mutton, manuring for milk, manuring for hay, the clover plant and its significance in arable farming, manuring of clover and other leguminous crops, manuring of cereals, roots, potatoes, and sugar-beet.

The film has a high educational value. The plot differences and the explanations concerning the dominant fertilising ingredients for the respective crops are mostly supported by data representing average results of a series of years and are thus outside the usual experimental error limits. Running through the film is a strong emphasis on the importance of "balance" in fertiliser dressings. This is necessary because there is no defect so common or so wasteful as one-sided or partial applications of manures. The importance of potash dressings for clover, mangolds, potatoes, and sugar-beet is also brought out in a convincing way by drawing chiefly upon the classical experiments on the subject. The film, however, is free from bias, and no attempt is made to give results without relation to the class of soil on which they have been obtained.

Book Received

THE PHYSICAL CHEMISTRY OF STEEL MAKING PROCESSES. A General Discussion held by the Faraday Society and the Iron and Steel Institute. London: The Faraday Society. Pp. 128. 8s. 6d.

The Calendar

Jan.		
18	Institute of Chemistry (Manchester Section): Discussion on "Chemical Nomenclature," to be opened by C. Hollins.	Manchester.
18	Faraday Society: Ordinary meeting. 5.30 p.m.	Burlington House, Piccadilly, London.
19	Hull Chemical and Engineering Society: "The Application of Physics to the Paint and Varnish Trade." A. de Waele. 7.45 p.m.	Grey Street, Park Street, Hull.
19	Institute of Metals (N.E. Coast Section): "The Principles which Govern the Heat Treatment of Non-ferrous Alloys." Professor F. C. Thompson. 7.30 p.m.	Armstrong College, Newcastle-on-Tyne.
19	Society of Chemical Industry (Birmingham and Midland Section): "Early Days of the Rubber Industry." B. D. Porritt. 7.15 p.m.	University Buildings, Edmund Street, Birmingham.
19, 26	Royal Institution: "X-Rays and Living Matter." James A. Crowther. 5.15 p.m.	21, Albemarle Street, London.
19	Mineralogical Society: Papers by Dr. C. E. Tilley, Dr. A. Brammall, A. H. Hallimond and G. Greenwood. 5.30 p.m.	London.
20	Leicester Literary and Philosophical Society (Chemistry Section): "The Development of Physical Science in the Last Forty Years." E. E. Brooks. 8 p.m.	Museum, New Walk, Leicester.
20	Society of Glass Technology: 2.30 p.m.	Manchester.
20	Society of Chemical Industry (Nottingham Section): "Dyeing and Bleaching of Cotton." Dr. Clibbens.	Nottingham.
20	Royal Society of Arts: "Problems in Paint and Varnish Technology." Dr. H. H. Morgan. 8 p.m.	John Street, Adelphi, London, W.C.
20, 21	Society of Glass Technology: Wednesday, January 20: A General Discussion on Refractory Materials for Glass Making. 2.30 p.m. Thursday, January 21: Papers by H. S. Blackmore, Professor W. E. S. Turner and Miss E. M. Firth. 3 p.m.	College of Technology, Sackville Street, Manchester.
21	Royal Society: Papers by W. Barlow, R. E. Gibbs, H. J. Gough, D. Hanson, S. J. Wright and C. H. M. Jenkins. 4 p.m.	London.
21	Optical Society. 7.30 p.m.	Imperial College of Science, South Kensington.
21	Chemical Society: Ordinary Scientific Meeting. 8 p.m.	Burlington House, Piccadilly, London.
22	Royal Institution: "The Work of the Davy Faraday Research Laboratory." Sir William Bragg. 9 p.m.	21, Albemarle Street, London.
22	Society of Chemical Industry (Glasgow Section): "Modern Views on the Vulcanisation of Rubber." B. D. W. Luff.	39, Elmbank Crescent, Glasgow.
22	West Cumberland Society of Chemists and Engineers: "Industrial Measurements and Scientific Works Control." B. Dunglinson. 7 p.m.	Workington.
22	Chemical Engineering Group. Joint Meeting with the Liverpool Section of the Society. "The Use of High Pressures in Chemical Industry." Dr. E. B. Maxted. 6 p.m.	Muspratt Lecture Theatre, University, Liverpool.
22	West of Scotland Iron and Steel Institute: "Open Hearth Practice." Andrew M'Cance.	Royal Technical College, Glasgow.

Problems in Filtration and Tube Mill Grinding

Papers by Chemical Engineers

At a meeting of the Institution of Chemical Engineers held at Burlington House, London, on Wednesday, papers, followed by discussion, were presented by Dr. Geoffrey Martin on "Tube mill grinding: with special reference to grinding in a current of air," and Mr. A. J. V. Underwood on "A critical review of published experiments in filtration."

Tube Mill Grinding

Dr. Martin in his paper pointed out that for many years it had been known that the more finely a rock or mineral was ground the greater the power consumed in r ducing it, but the exact nature of the law connecting the fineness of grinding with the work done had always been a matter of dispute. One school, headed by von Rittinger, asserted that the work done was proportional to the surface produced, while another school, headed by Kick, asserted that the work done was some complicated function of the particle size, but was not proportional to the surface. Probably the main reason why an important point like this remained unsettled was the fact that until the present research no one had accurately measured either the surface or particle size of the powders produced, but calculated the values from entirely inadmissible assumptions that the particles were perfect "spheres" or "cubes," or similar geometrical figures, instead of being irregular figures each one different from its neighbour. This method could only lead to erroneous results, because the particles must be treated by accurate statistical methods.

The very first thing needed in order to obtain reliable results was to devise accurate methods of measuring the surface of irregularly shaped particles such as occur when sand was crushed in a tube mill. In recent research described by the author this had been done for the first time.

The method adopted for determining the surface was as follows:—(1) A cube of pure quartz was suspended in $N/1$ hydrofluoric acid for 1 hour at 25° C. and the loss of weight determined. The surface is known accurately. It was found that to every sq. cm. of surface the loss of weight was 0·0000418 grams. (2) The experiment was repeated with the sample of sand powder, and the corresponding loss of weight ascertained. If x be the loss weight per 1 gram of sand, then the surface is:—

$$S = \frac{x}{0{\cdot}0000418} \text{ sq. cm.}$$

In carrying out the determination many precautions had to be observed in order to obtain accurate results. Over two years' steady research was necessary before all difficulties were overcome.

The main results were briefly summarised as follows:—(1) A method of accurately determining the surface of sand has been devised. (2) The work required in grinding sand is proportional to the surface produced up to at least a fivefold increase of surface. (3) The effect of dust in cushioning the blow is small in the tube mill. (4) Grinding in a current of air in the tube mill did not affect a noticeable saving in power.

Part of the cost of these experiments was defrayed by a grant made by the Department of Industrial and Scientific Research to the British Portland Cement Research Association.

Filtration Experiments

Mr. Underwood stated that a consideration of published data showed that the rate of flow through a filter cloth appeared to be proportional either to the square or the square root of the pressure according to the type of the cloth and the nature of the precipitate. Formulæ were deduced from these assumptions to express the relationships between the time of filtration, the rate of flow, and the volume of filtrate or thickness of cake. As the exact formulæ in these cases were somewhat complicated for use in practical applications, approximate formulæ were evolved based on the assumption that the relation between the time of filtration and the volume of filtrate at constant pressure could be expressed by a parabolic curve. This relation had been found to hold good in all the data examined. The method of derivation of the exact from the approximate formulæ was described. From published experiments on the filtration of "compressible precipitates" it appeared that the resistance of such precipitates was approximately a linear function of the pressure of filtration.

Table I. showed the calculated and observed rates of flow for various pressures:—

TABLE I.

Rate of flow through filter cloths (experiments of Clarke, Ure and Hinchley).

Cloth A (textile).

Pressure. lb./sq. in.	Observed rate of flow. c.c./min.	Rate of flow calculated from formula $F = 36{\cdot}95\ P^2$. c.c./min.
1·0	36·4	37
1·45	124	78
2·60	375	250
4·16	714	640
5·50	924	1,160
6·50	1,420	1,560
7·35	1,714	1,995
7·95	2,140	2,335
9·20	3,006	3,125
10·00	3,923	3,695
11·15	4,742	4,600
12·10	5,660	5,420
13·20	6,060	6,440

Cloth C (Monel metal).

Pressure. lb./sq. in.	Observed rate of flow. c.c./min.	Rate of flow calculated from formula $F = 3{,}540\sqrt{P}$. c.c./min.
0·70	750	2,960
1·00	1,873	3,540
1·35	3,810	4,110
2·05	4,975	5,060
2·80	6,860	5,920
3·90	7,740	7,000
5·65	8,735	8,430
6·35	9,465	8,920
7·35	9,650	9,600
8·95	10,150	10,560
11·15	10,850	11,800

With the exception of the figures for very low pressures, the general agreement was well within 10 per cent., which could be considered satisfactory in view of the difficulty of measuring accurately the low pressures or the high rates of flow.

In applying the laws relating to the rate of flow and the pressure as deduced from experiments, an important point to be considered was the question of the extent to which the resistance of the cloth was influenced by the superposition on its surface of an exceedingly thin layer of particles of a precipitate. It was a matter of common observation in the practice of filtration that the resistance of a cloth was largely increased by the deposition on its surface of a layer of particles of infinitesimal thickness. This increase in resistance was essentially an inter-surface effect and was considerably greater than the actual resistance of the layer of particles as would be measured for instance by increasing the thickness of a filter cake by this amount. In these circumstances it was hardly legitimate to assume that the law governing the relation between the pressure and rate of flow through the cloth alone would be the same as that when considering the flow through the cloth plus a small layer of particles. These assumptions were, however, fairly well borne out when applied to experimental data involving both the cloth and the filter cake.

The experiments of Clarke, Ure and Hinchley, although limited to low pressures, had a wider application than might appear to be the case at first sight. It should be remembered that the greatest drop in pressure was generally through the filter cake, while the smaller difference in pressure between the two sides of the filter cloth was usually such as would fa l within the range of these experiments. The difference in shape of the flow-pressure curves for the metal and textile cloths was a matter of some interest. A metal cloth might be considered as approximately equivalent to a number of small rigid orifices, and consequently it might be expected that the law governing the flow through orifices would be applicable, *i.e.*, the rate of flow should be proportional to the square root of the pressure, as was actually found to be the

case. A textile cloth, on the other hand, might be regarded as a number of small orifices bounded by elastic and porous boundaries. The flow through this type of cloth consequently depended upon two factors, namely, the flow through the orifices and the flow through the fibres which constitute the boundaries of the orifices.

Another Honour for Sir Max Muspratt

President-Elect of the F.B.I.

At a meeting of the Grand Council of the Federation of British Industries, held on Wednesday, it was unanimously decided to recommend to the general meeting the election of Sir Max Muspratt as President of the Federation in succession to Colonel the Hon. F. Vernon Willey.

Sir Max Muspratt, as our readers are well aware, is one of the leading figures in the British chemical industry and chairman of the United Alkali Co., Ltd. Three years ago there was celebrated the centenary of the alkali industry, which was founded by James Muspratt, the grandfather of Sir Max, who thus represents the third generation of his family to hold the chairmanship of that vast chemical undertaking, while at the present moment Sir Max's son has just taken his honours degree in chemistry at Oxford University.

Sir Max Muspratt, Bart.

Born in Liverpool in 1872, Sir Max is therefore 53 years of age. He was educated at Clifton College and at Zurich, entering in 1895 the works of the company of which he is now chairman. In 1901 he became a director on the technical side of the business and succeeded his father in the chairmanship in 1914. He is the first Englishman to hold the Diploma in Industrial Chemistry awarded by the Swiss Government. Indeed, his chemical achievements are too well known to all in the industry to need enumeration.

In addition to being chairman of his own business, he is the vice-president of the Association of British Chemical Manufacturers; deputy chairman of the Sulphuric Acid Association; chairman of the recently appointed Lord Mayor of Liverpool's Committee on Trade and Industry of the Port of Liverpool; and chairman of the Liverpool Economic League. He has taken a very active part in Liberal politics on Merseyside and was M.P. for the Exchange Division of Liverpool in 1910.

Great Public Work

But perhaps the special qualification which Sir Max will bring to the presidency of the F.B.I. is his first-class and possibly almost unique knowledge of municipal politics. In 1917 he was Lord Mayor of Liverpool, and since entering the City Council in 1903 has been at one time or another connected with almost every municipal activity in that city. At the present moment he is a member of the Council for the University of Liverpool, he is the deputy chairman of the Finance and General Purposes Committee of the Liverpool Corporation, and chairman of the Staffs Committee of the Corporation.

Lady Muspratt is almost as prominent in municipal politics as her husband and is a member of the City Council, serving on the committees on Health and on Hospitals. Indeed, Sir Max makes the proud boast that he and his wife were the first married couple to be on a public committee together!

During the War Sir Max worked in the closest touch with the Ministry of Munitions from its foundation and was chairman of the committee dealing with sulphuric acid, while his advice on the matter of chemical warfare and other matters was constantly solicited.

The Economics of Shale Oil Production

To the Editor of The Chemical Age.

Sir,—In February of last year you published some detailed calculations, showing how a good profit would arise from the treatment of a certain grade of shale, and estimating that the whole of the oil product would be sold locally. My own experience in calculating the returns from European shales of medium grades is that a paper profit can often be shown if it is assumed that the whole of the oil products can be sold locally. But, in the vast majority of locations, big shale plants would produce far more oil of the "fuel" type than local demands could utilise. The relatively small proportion of high-grade oils produced will stand the cost of rail transport, but the cheap oils cannot carry the cost, and these constitute the bulk of the product. Directly any large accumulation of fuel oils takes place, great cost is incurred in storage, and the entire proposition ceases to be economically valid.

In your issue of March 7, 1925, you kindly published a letter from myself pointing out this difficulty. My excuse for wishing to take up more of your space now is that this is precisely what has taken place in our Scottish shale industry.* The accounts show that, in the last six months to which they apply there was a minimum loss of nearly £60,000, but that there was an accumulation of a surplusage of 3,627,522 gallons of "gas and fuel oil" *over and above* the stock held at the close of the previous half-year. This accumulation was apparently unsaleable, as its value had been written down from 4d. to 2d. But if it had all been sold during the half-year at its estimated sale value of 4d. a gallon, it would have brought in over £60,000. Its cost of storage must also have been a serious item, but it does not figure in the statement printed.

But this problem of selling all fuel oil locally can often be overcome. Some spent shales can be utilised for the manufacture of cement, others for brick-making, and various other uses. And besides these industries subsidiary to shale-retorting, it would pay to establish industries not connected with shale, but dependent upon cheap fuel. For instance, the fortification of low grade solid fuels, for admixture with pulverised solid fuels, and for a host of industrial uses, the only stipulation being that such utilisation should be of a continuous nature, and not intermittent or seasonal—such as the needs of beet-sugar factories. If, by such means, all fuel oils could be sold locally as produced, and without the necessity for storing huge quantities, good grade shales, well located, could be made to pay their way. Moreover, in countries where imported oils are taxed, and in which no oil wells are found, there is an inducement to put down shale-works. The addition of one penny per gallon to the value of crude shale oil would have turned the average net loss of the Scottish shale industry into a profit.

I am tempted, if allowed, to demonstrate in another issue that the condition of the Scottish shale industry is not so hopeless as it appears from the report herein cited, and that, if we can abandon pseudo-philanthropic views, reduce the burden of taxation,† and tackle the industry from a purely economic standpoint, it still has a future.—Yours, etc.,

A. Worsley.

Isleworth, January 7, 1926.

* Board of Trade "Report on the Scottish Shale Industry." Cmd. 2538. 1925.

† The Board of Trade Report carefully hides the incidence of taxes and rates from public view.

Reviews

THE CHEMICAL ANALYSIS OF FOODS. By H. E. Cox, M.Sc., Ph.D., F.I.C. London: J. and A. Churchill. Pp. 323. 18s.

The author of this book states in his preface that it is quite impossible to deal adequately with food analysis in one small volume, and doubtless most of those with any experience of the subject will agree with him. This, however, does not mean that such a work as the one before us—which only claims to present the elements of the subject—may not serve a useful purpose. The novice who uses this book as his introduction to the analysis of foods will have been put well on the narrow way to perfection, whilst the experienced worker is not likely to read it through without receiving many stimulating ideas. In view of the difficulties the author has done his work well, the methods selected being reliable and the tables up-to-date and full of interest; the amount of starch in the table on page 116 would appear to be excessive. The book is well printed and bound, and can be recommended as being quite valuable, particularly to those who are commencing a study of the subject.

Many public analysts would like to see the facts contained in such a book as this made available to non-technical readers. It is practically certain that the average housewife has only the vaguest ideas in regard to the way her food supplies are changed and manipulated without due notice being given. Flour is a glaring example—it is "improved" with ammonium or potassium persulphate or benzoyl peroxide, and bleached with chlorine, nitric oxide or ozone and, although some three out of every four commercial samples are so treated, one looks in vain for any notification. G. D. ELSDON.

DAS KOLLOIDE GOLD. By R. Zsigmondy and P. A. Thiessen. Leipzig: Akademische Verlagsgesellschaft m.b.H. Pp. 229. 14 marks.

Colloidal gold is not only important on account of its suggested uses in medicine, biology and arts, but has achieved scientific importance by reason of the fact that it is employed as a standard for measuring the precipitating and protecting power of electrolytes and colloids. Obviously, it possesses great advantages compared with the colloidal solutions of other metals, such as iron and copper, which are attacked by water or weak reagents. On the other hand, many methods of preparing colloidal gold can hardly be considered suitable for standardisation, since the solutions contain materials of unknown characteristics. The book gives particulars of the various methods employed and of observations made, some of the descriptions being very detailed. It bears throughout the stamp of personal experience and achievement and should prove of assistance to all workers on similar problems. S. P. S.

THE CHEMISTRY OF DRUGS. By Norman Evers, B.Sc., F.I.C. London: Ernest Benn, Ltd. Pp. 247. 32s. 6d.

This book is admirably suited for those desiring to become generally acquainted with the chemistry of the principal substances employed in medicine. Although not strictly a book of reference, there are many to whom it will be useful to have the book near to hand. It is divided into two parts: the first dealing with drugs prepared by chemical synthesis, the second with those derived from animals and plants. Since no inorganic substances are dealt with the author would appear to take the view that these are not regarded as coming within the meaning of the word "drug."

The synthetic drugs are classified in accordance with the physiological effects ascribed to them, but the natural drugs are classified according to their origin, and are divided into alkaloidal drugs and those not containing alkaloids. Fifty-six pages are devoted to synthetic drugs; in so short a space it is naturally impossible to deal with all the synthetic drugs employed in medicine, but a wise selection has been made. The information given in regard to each of the substances dealt with relates chiefly to the chemical constitution and properties. Methods of preparation are briefly referred to, but the author has intentionally omitted all reference to methods of technical production.

Throughout the book seems accurate and to the point, showing the great care which the author has displayed in its production. The section dealing with drugs of natural origin is more complete than that treating of synthetic drugs, and both sections constitute a summary which will prove of great value to students. Some references to original papers are given, but many more might usefully be added. It also seems that the omission of all but the scantiest reference to the physiological properties of the substances described rather detracts from its usefulness. Perhaps the author will see his way to remedy these omission in a future edition. The book bears a handsome appearance and is printed in clear type on thick paper. Appendices are given summarising the chemical constituents of naturally-occurring drugs, and a good index is provided. F. H. C.

The Chemical Engineering Library

THE CHEMISTRY OF POWER PLANT. By W. M. Miles, F.C.S., A.I.Mech.E. London: Ernest Benn, Ltd. Pp. 144. 6s.

Essential as coal is to our very existence, it is only of recent years that power plant engineers have realised the fuel economies which may be effected by the scientific control of combustion. In this book the author has not only set out clearly and concisely the underlying principles of boiler house economy, but in addition has given in full detail the methods of analysis employed in practice for coal, boiler feed water, refractories, transformer and switch insulating oils, etc.

A number of extremely useful tables are included containing information in a compact form which is often difficult to obtain at short notice. In addition, the book is well illustrated and printed in large type on excellent paper and fully maintains the high standard of the previous publications in this series. It can be recommended with every confidence to anyone having the control of steam power plant.

B. H.

THE DESIGN AND ARRANGEMENT OF CHEMICAL PLANT IN RELATION TO ITS ECONOMIC CONTROL. By Geoffrey Weyman, D.Sc., F.I.C. London: Ernest Benn, Ltd. Pp. 140. 6s.

In this volume the author deals with the subject from a general standpoint and draws attention to many points to be observed in the layout and design of chemical plant if economic working is to be obtained.

Many of the generalisations are not self-evident but the result of close observation by the author, and suggest lines of thought applicable in many directions. So far as the general arrangement of the book is concerned only praise can be given, but the inclusion of more actual figures, such as average running and maintenance costs of various chemical plant, would have been helpful. There is one point on which we beg to differ from the author. When referring to evaporators on page 89, he states that "the capacity of a plant is considerably increased under vacuum," but does not give any reason for this increase. Experience shows that in many cases the output for a given evaporating surface is actually *decreased* by converting from pressure to vacuum, as, although a larger temperature drop is obtainable when working under vacuum, the lower mean temperature at which the heat is transferred and the greater viscosity of the liquid decreases the coefficient of heat transfer per degree difference in a greater ratio than the increase in mean temperature, thus the total heat transferred is lessened.

In the section devoted to heat exchangers, condensers and coolers, the author has compressed into a small space much useful information. He has outlined in a very clear manner the main factors which control the rate of heat transfer, a subject upon which there is little published information of practical value. He also recommends whenever possible the use of low grade steam for heating, such as is obtained from pass-out and bled turbines, a point which has been sadly neglected by previous writers.

The book is undoubtedly a valuable addition to the published information available to the chemical engineer and plant user.

B. H.

IN acknowledging THE CHEMICAL AGE YEAR BOOK for 1926, the Thompson-Hayward Chemical Co., of Kansas City, U.S.A., write: "This is one of the most interesting and comprehensive publications of its kind that we have ever had the pleasure of receiving."

Chemical Trade Returns for December, 1925

Imports Up and Exports Down on Last Year's Figures

IMPORTS of chemicals, dyes, drugs, and colours (excluding mercury) for December totalled £1,314,052, an increase of £113,823 on last year's figures and an increase of £55,549 on the total for the previous month. Exports are valued at £1,764,834, which represents a decrease of no less than £288,880 on December, 1924, and a decrease of £12,488 on the previous month. It must be borne in mind, however, that the Christmas holidays are included in the period under review.

On the import side there is a remarkable increase in the figures for bleaching materials from 4,120 to 14,406 cwt. Borax also shows a figure nearly five times that of the previous month. Crude glycerine has increased, also sodium nitrate, but a marked fall is noticed in the case of red and orange lead, saltpetre, and other potassium compounds. Sodium compounds are also down.

On the export side the serious losses in the sulphate of ammonia market in Japan, which were commented upon last month, are again in evidence. The aggregate figures for sulphate are also down slightly, with France dropping off. Coal tar products on the whole are maintained, but tar and creosote oil have dropped from 4,921,956 to 366,643 galls. Sodium sulphate has nearly doubled. Barytes has jumped from 1,642 cwt. to 10,224 cwt.

Imports

	Quantities. Month ending December 31.		Value. Month ending December 31.	
CHEMICAL MANUFACTURES AND PRODUCTS—	1924.	1925.	1924. £	1925. £
Acid Acetic .....tons	907	641	42,375	26,346
Acid Tartaric.... cwt.	1,932	3,001	9,536	14,379
Bleaching materials ,,	4,120	14,406	4,833	11,721
Borax..... ,,	2,706	12,410	3,093	14,619
Calcium Carbide .. ,,	97,250	94,200	66,422	60,353
Coal Tar Products value	—	—	14,738	24,881
Glycerine, Crude .. cwt.	326	1,200	868	2,987
Glycerine, Distilled ,,	112	144	472	555
Red and Orange Lead ,,	4,898	2,737	9,927	5,543
Nickel Oxide ..... ,,	1,598	1,652	8,168	8,989
Potassium Nitrate ,,	17,428	10,218	19,720	11,631
Other Potassium Compounds ..... cwt.	567,295	328,076	97,057	85,765
Sodium Nitrate .. ,,	32,365	107,129	22,150	64,523
Other Sodium Compounds..... cwt.	89,847	26,014	98,766	20,708
Tartar, Cream of ,,	4,227	3,136	16,125	12,366
Zinc Oxide .....tons	643	986	20,780	36,008
All other Sorts..value	—	—	237,411	414,243
DYES AND DYESTUFFS—				
Intermediate Coal Tar Products..... cwt.	133	241	1,596	1,223
Alizarine ..... ,,	996	201	5,746	5,073
Indigo, Synthetic ,,	—	—	—	—
Other Finished Dyestuffs..... cwt.	1,937	2,958	54,470	61,684
Cutch ..... ,,	5,716	4,320	8,601	5,951
Dyeing Extracts .. ,,	8,498	4,448	26,970	13,472
Indigo, Natural.. ,,	93	96	1,906	2,965
Extracts for Tanning ,,	98,735	81,363	93,107	78,467
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground... cwt.	63,080	59,123	15,633	14,241
White Lead, dry.. ,,	13,451	13,323	27,580	27,653
All other Sorts... ,,	65,112	62,846	101,590	106,608
Mercury.....lb.	132,303	64,344	18,572	11,819
Total of Chemicals, drugs, dyes and colours .....value	—	—	1,218,801	1,325,871
Total for year 1925 ,,	—	—	39,169,583	36,638,023

Exports

	Quantities. Month ending December 31.		Value. Month ending December 31.	
CHEMICAL MANUFACTURES AND PRODUCTS—	1924.	1925.	1924. £	1925. £
Acid Sulphuric ... cwt.	2,113	2,587	2,684	2,744
Acid Tartaric .... ,,	1,044	864	5,924	4,799
Ammonium Chloride tons	322	383	9,016	11,749
Ammonium Sulphate—				
To France tons	2,198	494	27,736	6,056
Spain and Canaries.. ,,	7,729	3,640	100,519	43,901
Italy ..... ,,	479	779	6,438	9,807
Dutch E. Indies ,,	4,287	7,245	57,432	91,508
Japan ..... ,,	5,936	4,185	77,887	50,231
British West India Islands... tons	527	498	7,049	6,569
Other Countries ,,	3,438	6,812	47,658	81,055
Total ..... ,,	24,594	23,653	324,719	289,127
Bleaching Powder .. cwt.	36,503	25,264	18,498	11,819
COAL TAR PRODUCTS—				
Anthracene..... cwt.	—	1,680	—	687
Benzol and Toluol galls.	6,118	546	550	58
Carbolic Acid..... cwt.	11,190	16,287	21,995	25,336
Naphtha ..... galls.	5,310	6,757	650	695
Naphthalene..... cwt.	1,182	565	996	580
Tar Oil, Creosote Oil, etc. .....galls.	4,921,956	366,643	153,134	14,267
Other Sorts ..... cwt.	39,701	25,663	20,468	20,169
Total.....value	—	—	197,793	61,792
Copper, Sulphate of..tons	757	1,838	17,647	38,791
DISINFECTANTS, INSECTICIDES, ETC..... cwt.	36,883	30,228	83,863	76,319
Glycerine, Crude.... cwt.	12,722	4,279	36,380	12,243
Glycerine, Distilled.. ,,	12,929	13,225	49,267	51,488
Total ..... ,,	25,651	17,504	85,647	63,731
Potassium Chromate and Bichromate..... cwt.	3,875	1,636	8,316	3,118
Potassium Nitrate... ,,	1,188	605	2,244	1,231
Other Potassium Compounds ..... cwt.	2,141	1,574	12,012	14,826
Total ..... ,,	7,204	3,815	22,572	19,175
Sodium Carbonate .. cwt.	448,891	351,605	115,513	109,940
Sodium Caustic ..... ,,	129,991	121,879	103,967	86,509
Sodium Chromate and Bichromate..... cwt.	5,934	4,258	13,159	6,168
Sodium Sulphate.... ,,	155,117	278,557	21,574	32,642
Sodium Compounds ,,	44,944	39,971	61,385	51,227
Total ..... ,,	784,877	796,270	315,598	286,486
Zinc Oxide.....tons	150	109	5,111	3,645
Chemical Manufactures, etc., all other sorts value	—	—	344,526	258,927
Total of Chemical Manufactures and Products(other than Drugs and Dyestuffs) .....value	—	—	1,433,598	1,129,104
DYES AND DYESTUFFS—				
Products of Coal Tar cwt.	5,854	4,480	66,734	44,556
Other Sorts..... ,,	3,784	5,549	6,396	6,477
Total ..... ,,	9,638	10,029	73,130	51,033
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground .. cwt.	1,642	10,224	1,070	3,772
White Lead, dry.. ,,	14,145	5,236	35,337	12,880
Ground ..... ,,	31,583	46,004	72,752	105,855
Paints and Enamels Prepared..... cwt.	25,187	30,325	80,747	99,545
All other sorts.... ,,	43,716	53,517	90,215	101,178
Total ..... ,,	116,273	145,306	280,121	323,230
Total of Chemicals, Drugs, Dyes and Colours..... value	—	—	2,053,714	1,764,834
Total for year 1925 ,,	—	—	25,478,373	23,576,571

The Agglutinating Value of Coal

Papers at Manchester S.C.I. Meeting

At a meeting of the Manchester Section of the Society of Chemical Industry held on Friday, January 8, Mr. M. Barash, M.Sc., A.I.C., read a paper entitled "A Proposed Standard Method for the Determination of the Agglutinating Value of Coal." In view of the interest recently evinced on the production of satisfactory solid smokeless fuel, it was hardly necessary, Mr. Barash stated, to elaborate theories with regard to the coking of coal. The phenomena associated with the coalescing of coal during carbonisation, however, had been recognised as fundamental in the industrial utilisation of coal, particularly in gasworks and coke oven practice.

It must first be realised that a coal which contained the highest proportion of agglutinant—i.e. of β and γ compounds, to which the coking of coal was now fairly definitely attributed—did not necessarily form the best coke under the ordinary conditions of carbonisation. Many cases were known of coals containing comparatively large proportions of these soluble compounds, and which gave quite poor cokes in comparison with cokes obtained from coals which yielded smaller proportions of agglutinant.

Influence of the Inert Matter

Any coal might be taken to be composed of two portions—the smaller portion being fusible and giving a cellular, more or less vitreous, mass on destructive distillation, and the larger portion being infusible, often termed "Inert matter." It was generally accepted that these two fractions did not necessarily form a perfectly homogeneous mixture in the coal mass, and the nature of the infusible material was perhaps the most important factor in determining the quality of the coke produced during the carbonisation of coal.

During the progress of carbonisation the molten cementing material affected the mass of coal in three ways: (1) It contributed very largely to the structure and appearance of the coke produced, through the rapid evolution of gaseous products from both the fusible and infusible portions of the coal. (2) It functioned as a binding medium between the particles of infusible material. (3) It was more or less rapidly absorbed or drawn by capillarity into the pores of the infusible material. It was mainly the relative porosity or absorptive capacity of this latter material which governed the amount of cementing material which would be left available for binding together the coke mass.

Coals existed in which either the inert material was of such a nature that it would absorb comparatively little agglutinant, or in which the amount of fusible material was greatly in excess of the requirements for both satisfying this porosity and binding the particles together. Such coals generally yielded rather weak, friable, cokes if carbonised alone and in their natural condition, but might be made to yield considerably better cokes by several processes: (1) Removal or destruction of part of the agglutinant. (2) Weathering, chemical, or other special treatment before carbonisation to alter the condition of the infusible matter; (3) Blending with a non-coking coal, coke, breeze, charcoal, etc., i.e. a material which was deficient in, or devoid of, agglutinant.

The Composition of Durain

In a paper on the chemical composition of durain, Mr. N. Simpkin, A.I.C., said that although present in large quantities in some seams, durain was practically absent from others. As it was recognised that the durain present in different seams would vary considerably in properties, samples were obtained from a number of Lancashire seams, and these had been compared with the remainder of the coal from the same seam. In every case the durain was picked out by hand from a complete section of the seam, and separated from any adhering bright coal. As a result of investigation it was found that the ash content varied considerably, being as low as 1·16 per cent. in one coal and almost 28 per cent. in another. It was worthy of mention that in some cases the ash content of the durain was less than that from the remainder of the seam. This rather traversed the general idea that durain usually contained a high ash content. In colour the ash was, as a rule, white or very pale brown or cream but might be darker. It was highly refractory, possessing a melting point usually above 1,400° C., even if the coal from which it was obtained possessed a readily fusible ash, although there were exceptions to this.

The volatile matter varied considerably, while in some cases the coke produced at 900° C. was barely coherent. Other samples yielded cokes which were very hard though usually slightly shrunken and not "fused," and the agglutinating value was in each case lower than that of the remainder of the coal. In every case the sulphur content was very much less than in the remainder of the coal, being in general of the order of 0·5 to 0·7 per cent., although one or two cases approximated to 2 per cent. The calorific value of the durain compared very favourably with the whole seam sample, and the gas yield was usually lower than from the other part of the coal, while the yield of liquor was often high.

The Nitrogenous Constituents of Barley

A third paper entitled "The Changes in the Nitrogenous Constituents of Barley during Germination" was presented by Dr. T. K. Walker, F.I.C., and Mr. V. Subramaniam, who said that although the starch question in brewing and allied fermentation industries had now been practically cleared up, the position as regarded the nitrogen question was much less satisfactory. Hitherto no one had yet determined the quantitative relationships between the proteins of the grain and the simpler nitrogenous substances which the proteins yielded on hydrolysis by protoclastic enzymes. During the malting of barley much of the insoluble protein matter present in the corn was converted into a soluble condition and a large proportion of it was also broken down to much simpler substances belonging to the class of amides, in which state it was both soluble and easily diffusible. This diffusible nitrogenous matter could then pass to that portion of the barley-corn where it was required to contribute to the nourishment of the young plant which was developing, and which, before it had thrown out its first green leaves, was not capable of maintaining an independent existence.

Under whatever conditions barley was allowed to germinate, germination was accompanied by a manifestation of bacterial activity, and evidently there was some close relationship, probably symbiotic in nature, between the processes. An attempt had therefore been made to study quantitatively the stages in the degradation of the proteins in germinating the barley, and the activities of the micro-organisms. The results obtained to date indicated that there was an intimate relationship between the two, and that it was probably by means of the enzymes which the bacteria secreted that they were enabled to take a large share in the breakdown of the proteins.

The Trade of the Dyer

On Tuesday, January 5, Sir William Bragg gave the fourth of his series of Christmas lectures for young people at the Royal Institution, London, his subject being "The Trade of the Dyer." A large amount of interesting research was carried out in some of the great trades, Sir William said, of which very little was heard. Progress came from probing into small things, and it was because the dyer had penetrated right down to the molecules of which things were made that he had obtained a mastery over his work.

The trade of the dyer had undergone a remarkable change during the last half-century. Indigo and madder, two most important dyes, and the parents of other dyes, were no longer obtained entirely from plants, but mainly from coal. Natural indigo had been previously obtained from leaves and madder from a root by processes discovered so long ago that they had no record of their origin. It was strange that man should have searched the natural world for substances wherewith to satisfy his love of colour and, in the end, should have been forced to so limited a choice. The fact was that while stains were many, useful dyes were few.

It had long been known that colour was usually produced by the destruction of colour. Collectively, the series of waves of light was white. If any part was missing there was colour. When a stain or dye absorbed colour, as it must do, the action was due to the fact that in the molecule of the dye there was something which absorbed a particular wave-length; and it did so because it was itself capable of emitting light of that particular wave-length. The dye chemist had discovered that colour was always associated with the presence in the molecule of certain groupings in its structure. Sir William showed a number of lantern slides illustrating colour phenomena and gave several demonstrations.

Viscose Silk Dyeing Problems

Practical Lecture by Mr. C. M. Whittaker

THE fourth of the series of lectures arranged by the Worshipful Company of Dyers delivered at the Dyers' Hall, London, on Monday, dealt with artificial silk dyeing. The lecturer, Mr. C. M. Whittaker, of Courtaulds, Ltd., dealt with viscose silk, though, broadly speaking, nitro cellulose, cuprammonium and viscose silk could be grouped as one from the dyer's point of view. Acetate silk displayed an almost complete indifference to the usual dyestuffs employed in the dyeing of the other three materials. The lecturer paid a tribute to British dyeing technologists and dyestuffs manufacturers for developing a special dyeing technology and dyestuffs for this purpose.

When dyeing viscose yarn one had to forget everything about the dyeing of cotton. The mechanical difficulties were of manipulation and penetration. Viscose yarn was much more sensitive in manipulation than cotton, and it was weaker when wet than when dry. The two important things to be guarded against were strain and friction. Viscose was a long continuous thread consisting of filaments, varying in number from 18 to 50. If a thread broke, the filaments sprang out like a brush, and if that happened in the dye liquor there might be much trouble. Friction produced hardness or slubs; also strained places reflected the light and produced bright spots across the fabric. If the yarn were severely strained before it was dyed, the strained portion caused light and dark patches.

Very little hand dyeing was done by Courtaulds as against machine dyeing. The sticks Mr. Whittaker used consisted of steel tubes overlaid with a covering of hard rubber, polished smooth. Monel metal systems were common in this country and the United States and had advantages over copper. Mr. Whittaker expressed the opinion that hand work was inferior to machine work.

Types of Machinery

In one type of machine the yarn was stationary, and the dyeing liquor was circulated through it; the other which Courtaulds used consisted of porcelain rollers, upon which could be placed 3 or 4 lbs. of artificial silk. The rollers were rotated mechanically, which gave the yarn a throw in the dye liquor and ballooned it out. Each skein made two complete revolutions in one minute. When working at low temperatures, however, the yarn had a tendency to ball up, and caused trouble subsequently when on the bobbins. The whole tendency of the textile industry was for faster and faster dyes, and it was unfortunate that faster dyes meant longer processes. The dyeing of viscose silk fast to perspiration involved a process so long as compared with cotton that the winding result was inferior. Viscose yarn after dyeing could not be wrung out, but had to be wrapped in cloths and put into a hydro extractor.

Drying Methods

Mr. Whittaker said that his practice was to charge the drying room with the skeins during the day, and to circulate during the night a slow current of air, which could not get above 120° F. That was followed by blowing a current of cool air through the room. In some cases shades which had gone into the stove and had been modified by heat action had hung for four days before regaining their original shades. Water used in dyeing should always be soft. All the water used in Courtaulds' dyehouse went through a Permutit plant. Soap was an admirable lubricant in which to dye viscose yarn; it minimised the danger of friction. Hard water might give sticky lime soaps. Viscose yarn should never from choice be treated with metallic salts.

Mr. Whittaker emphasised that, with the exception of blues and greens, the dyer might, by an intelligent choice of dyestuffs, minimise light and dark hank trouble by at least 70 per cent. A simple test consisted in hanging threads into a certain strength of dye liquor. The lecturer used a solution of 400 c.c. of water, containing 0·4 gramme of dyestuffs, 0·2 gramme of soap, and 1 gramme of Glauber salts, at a temperature of 60 deg. F. If threads were hung in various dyestuff solutions for a quarter of an hour, the colours ran up the threads at different rates. The less the dyestuff ran up the threads, the better it was for covering up defects in commercial viscose. The ordinary axioms of dyeing had taught him that the slower the dyestuff dyed, the more readily did it level, but it was not true in the case of viscose, because if a dyestuff dyed on slowly, the greedy viscose had a very long time during which to work, and the normal viscose came out lighter; the slow-dyeing dyes gave the worst results in penetration. Blues and greens would not level up, and were always bad dyestuffs.

Direct cotton dyestuffs were used, Mr. Whittaker estimated, for dyeing 90 per cent. of the world's viscose production. Sulphur dyestuffs were amongst the worst class for exaggerating defects. Another type used for giving fast shades in viscose were the azoic dyestuffs. They gave excellent results, and, he believed, would be used still more for viscose when artificial wool, which was really another form of artificial silk, was developed. Finally, there were the vat dyestuffs, which were used to guarantee fadeless materials.

British Fine Chemical Progress

Boots' New Laboratories to Meet Demands

THE Fine Chemical Department of Boots Pure Drug Co., Ltd., has made further progress during the year 1925 (a correspondent writes) in both research and manufacture. So great, indeed, has been the development of the manufacture of the special therapeutic substances which the firm supplies, that the installation and equipment of new laboratories for bacteriological and pharmacological testing became necessary early in the year. These laboratories are now in full commission, and the facilities for research and development have been correspondingly enlarged. The 1926 list of Boots research chemicals contains the names of over 1,000 substances most of which are made in the Nottingham laboratories. To give the special worker the necessary guarantee of purity, an analytical certificate is supplied with each consignment, if desired.

The manufacture of insulin has been still further perfected, and the price at which insulin is marketed in this country is lower than that at which it is sold even in Canada, where insulin was discovered. A great export trade in this line has been developed, and Insulin—Boots is now known very widely throughout the Empire. Attention has also been paid to certain other glandular products which are becoming increasingly important in modern therapy. The new laboratories permit that thorough examination of these products which experience has shown to be necessary. It is notable, for instance, that the various makes of Pituitary Extract (Posterior Lobe) vary within wide limits as to strength and concentration. Pituitary Extract—Boots (Posterior Lobe), guaranteed 10 per cent., has been introduced to meet the demand for a product absolutely uniform in strength when compared with the available Medical Research Institute Standards.

The manufacture of saccharin continues to be one of the main items occupying the attention of the department, and Saccharin—Boots, guaranteed over 97 per cent. and free from the para isomer, is a fine chemical which will bear close comparison with the most carefully prepared of continental chemical products. Chloroform, aspirin, atropine, synthetic perfumes, pure dextrose, etc., are other lines to which Boots Pure Drug Co., Ltd., are giving continual attention.

Dyestuffs Licences for December, 1925

THE following statement relating to applications for licences under the Dyestuffs (Import Regulation) Act, 1920, made during December, has been furnished to the Board of Trade by the Dyestuffs Advisory Licensing Committee. The total number of applications received during the month was 571, of which 487 were from merchants or importers. To these should be added 38 cases outstanding on November 30, making a total for the month of 609. These were dealt with as follows:—Granted, 485 (of which 452 were dealt with within seven days of receipt); referred to British makers of similar products, 86 (of which 68 were dealt with within seven days of receipt); referred to Reparation Supplies available, 14 (all dealt with within two days of receipt); outstanding on December 31, 1925, 24. Of the total of 609 applications received 534, or 88 per cent., were dealt with within seven days of receipt.

Water Trough Ash Conveying

An Interesting Chemical Phenomenon

MOST of the troubles of the mechanical conveying of hot ash and clinker from steam boiler and other furnaces seem to have been solved by the sealed water trough method, which is now finding an extensive application and operates on three distinct principles: (1) a continuous sluice or current of water; (2) stagnant water with a periodical flush-out, and (3) stagnant water having a submerged drag link conveyor. In all three methods the red hot material passes direct into the cold water, which in the first place results in the large pieces being fractured immediately. It is very interesting to note also that under these conditions the water becomes alkaline, in spite of the fact that one of the main troubles has always been the formation of acid when a pile of ash and clinker is quenched by sprinkling with water, giving a strongly corrosive effect. This is due mainly to the formation of sulphur acids from the pyrites in the coal, but apparently in the presence of a large excess of water, calcium, sodium, and potassium salts are dissolved, which neutralise all the acid and leave an excess of alkali.

A typical modern sealed water trough ash conveyor on the third principle is the "Usco" installation for the new Nottingham super-power station. The boiler plant consists of six "Stirling" water tube boilers, each of which has an evaporative capacity of 55,000 lb. of water per hour, fired with three "Class A" "Underfeed" standard travelling grate stokers, that is, 18 stokers in all, and the ash handling equipment is arranged in the form of two lines of trough conveyors, combined with inclined elevators, each of which takes the ash and clinker from three boilers, that is, 9 mechanical stokers.

The horizontal closed water troughs are of cast iron, having a total length of 137 ft., and the ash and clinker is discharged continuously into each trough through cast iron shoots which dip into the water and give an absolutely airtight seal.

The submerged drag link chain conveyor consists of a double chain with 1 ft. 7½ in. centres and 8½ in. pitch, fitted with crossbars or paddles which are spaced apart 2 ft. 1½ in. and are 4½ in. deep, with extra wide case-hardened blocks, and the troughs lead at the end to the inclined drag link conveyors at an angle of 35° to the horizontal which takes the quenched material to the overhead ash tanks. These conveyors are 60 ft. long and the ash tanks have a storage capacity of 600 c. ft., while the drive for each complete line of conveyor is a 5 h.p. motor, the speed of the chains being 10 ft. per minute and the total capacity 2½-3 tons of ash and clinker per hour. The same method is also applicable to Lancashire boilers and, in fact, any furnace plant. Over 60 installations are now at work in Great Britain.

Recovery of the Pitch Market

THE pitch market (according to the chemical markets correspondent of the *Times Trade Supplement*) has been a feature of great interest of late. It was not generally anticipated that prices as low as 37s. 6d., such as were quoted early in 1925, would be again reached. Latterly there has been a welcome recovery, and quotations around 57s. 6d. are being made, with every likelihood of further advances. The former depression may be accounted for by a fall in the export demand, the depression of the patent fuel industry, and to some extent by an increase of output. The exports fell from 413,588 tons in 1923 to 315,527 tons in 1924, while home production rose from 532,437 tons to 625,122 tons. The exports for the first 11 months of last year reached 351,183 tons. The oversea markets have been redistributed. The French markets, which took in 1925 25 per cent. less than in 1923, has already largely recovered, and the same applies to Belgium. The Italian markets, which during 1921 to 1923 occupied subordinate positions, have now become relatively important outlets for British pitch. The factor which seems most likely to influence the stability of the pitch export market is the cessation of reparation supplies to France and Italy. With the return of healthier conditions in the pitch market, domestic and industrial users of gas should eventually benefit in the price of gas, particularly if other gas residuals show a healthy tendency.

U.S. Chemical Foundation Patents

THE Chemical Foundation, Inc., has recently published a classified list of the patents owned by it, grouped by subjects under the classification used by the U.S. Patent Office. This publication is the result of work of the Foundation in co-operation with a committee of the Synthetic Organic Chemical Manufacturers' Association of which Mr. D. B. Keyes, of the U.S. Industrial Alcohol Company, was chairman. This list is published primarily in order that all manufacturers may have a quickly available and comprehensive listing of all patents owned by the Foundation in which they may be interested, and it is hoped by means of this to avoid a repetition of the happenings in the case of methanol, where important patents lay unlicensed in the files of the Foundation for months after the product was being manufactured in Germany and imported into the United States in large quantities.

According to the report over $2,000,000 was expended for research in coal tar products in 1924. A comparison with the total value of the finished coal tar products sold during the year gives the impression that expenditures for investigation in this industry have been greater than in any other industrial field. A total of more than $25,000,000 has been spent in research work during the years 1917 to 1924, inclusive.

Calendars

WE have received and acknowledge with thanks various calendars. J. M. Huber, Ltd., of 69, Southwark Street, London, S.E.1, have produced a distinctive wall calendar. Each sheet is printed in a different colour to demonstrate the efficiency of their inks, and reference to each colour is made.—The sheets of the calendar from Crofts (Engineers), Ltd., of Thornbury, Bradford, illustrate and describe typical plant produced by the firm.—R. and H. Leigh and Sons, Ltd., of Orlando Ironworks, Bolton, give a distinctive representation of their carboy hampers on a well printed wall calendar.—James Mellis and Co., soap makers, Prestonpans, have forwarded a refill for their permanent desk diary.—The Gas Light and Coke Co. are continuing their monthly blotter bearing a suitable illustration and the month's calendar on the reverse.—The calendar from C. Isler and Co., Ltd., artesian well engineers, of Bear Lane, Southwark Street, London, takes the form of a large wall sheet, printed in colours and illustrating the use of the company's plant in various circumstances.

Institution of Chemical Engineers' Meetings

THE following meetings have been arranged by the Institution of Chemical Engineers:—

February 10, "The Control of Chemical Plant Operation by Statistical Methods," by Douglas Rider and T. Campbell Finlayson. Other papers will be added to this meeting if possible.

March 10, Papers on "Refrigeration" by H. M. Dunkerley and W. C. Statham. Full details of these meetings will be announced separately.

It has been decided to hold the Fourth Annual Corporate Meeting of the Institution in London in the second week of July next, to coincide with the Annual Meeting of the Society of Chemical Industry. This arrangement was adopted at Leeds this year with great success.

A New B.D.C. Colour

AN important addition to the range of insoluble pigment colours manufactured by the British Dyestuffs Corporation is Monolite Red C Paste. This is the subject of a pamphlet just issued, which claims that the new colour is of special interest to manufacturers of printing ink lakes on account of its full, fiery red shade that possesses good body and a fine bronze overtone. It is of limited interest also for lakes, for paints fast to lime, also for wall and surface papers when a high standard of light fastness is not essential. Being practically insoluble in spirit, it is fast to varnishing. The directions for use of Monolite Red C Paste state that it gives the best results when precipitated as a barium lake with barium chloride.

From Week to Week

A NATIONAL FUEL BOARD has been established in Spain by Royal Decree.

H. HOLROYD AND EDMONDSON, LTD., of Sheepscar Dye Works, Leeds, inform us that the company will in future be under the sole management of Mr. S. Todd Holroyd.

TWO NEW BILLS are expected to be introduced during the coming Parliamentary Session, one dealing with smoke abatement and the other with lead poisoning regulations.

SIR ROBERT HADFIELD has been awarded the Cross of an Officer of the Legion of Honour by the French Government in recognition of his noteworthy contributions to metallurgical knowledge.

SIR JOSIAH STAMP, formerly secretary and now a director of Nobel Industries, Ltd., took up his duties as president of the executive of the London Midland and Scottish Railway at Euston on January 4.

THE DISCOVERY of high-grade chrome in the Great Dyke area of Rhodesia is reported. Assays of chromite show values from 52 per cent. upwards to as high as 56 per cent. of oxide, the reef running as wide as four feet.

THE SUM OF £8,500 is to be spent by the Tasmanian Government on the carbide works at Electrona, and the production cost is expected to be reduced by 50s. per ton. The Soderberg continuous electrode method is to be installed.

PROFESSOR H. E. ARMSTRONG gave a juvenile lecture on "Alice in Wonderland at the Breakfast Table" on Wednesday at the Royal Society of Arts, London. It took the form of a play and was designed to interest children in science and in particular in the properties of egg shells.

SIR WILLIAM MACKENZIE, K.C., is shortly resigning the post of president of the Industrial Court, which he has held since the establishment of the Court in 1912. Sir William is one of the best known legal specialists on arbitration in industrial disputes. He will be succeeded by Mr. H. S. Morris, K.C.

IT IS STATED, though not officially, that the Bleachers' Association has purchased the bleaching works of Ashworth and Smith, Ltd., of Clitheroe, which were privately owned by a firm, the head of which died recently. The profits are said to be about £8,000 per annum. The Association now has over seventy branches.

ARTIFICIAL WOOL developments, which has been the subject of numerous reports recently, are stated to be the reason for the presence in London of Mr. Gualine, President of the Snia Viscosa Italian artificial silk company. Large works in the north for the manufacture of this "sniafil" are thought to be under consideration.

THE PARTY OF SOUTH AFRICAN STUDENTS now touring the country visited Port Sunlight on Friday, January 8, and were received by Lord Leverhulme, Mr. C. W. Barnish and Mr. J. L. Ferguson. Lord Leverhulme mentioned the close connection of his company with South Africa through the works at Durban, Cape Town, and Johannesburg.

NO CONFIRMATION IS FORTHCOMING of the New York reports of a great German-American steel trust financed by Dillon, Read and Co., to include Krupp, Kloeckness and the works on the Ruhr. It is stated the report arose erroneously out of two distinct negotiations, namely, the formation of a German steel trust and a loan by the Dillon Read Co. to the Rhine-Elbe Union.

THE ESTABLISHMENT of a successful superphosphate business was referred to at the annual general meeting of the Electrolytic Zinc Co. of Australasia at Melbourne recently. The company had been able to meet all demands and the grade produced had won universal approval. The firm was co-operating with the Tasmanian Government in propaganda on the possibilities of superphosphates in agriculture. The zinc industry was progressing satisfactorily.

IN REGARD TO THE STRIKE at the works of Blackie and Co., manufacturing chemists, Tower Bridge Road, London, which commenced on Monday, October 26, involving fifty men and women, the National Drug and Chemical Union state that over last week-end eight girls have accepted an offer of improved conditions and have returned to work. The union, however, reports that it is continuing the dispute and has placed the remaining strikers on full wages.

THE BRITISH ASSOCIATION SECTION PRESIDENTS for this year's meeting at Oxford from August 4 to 11 have been announced by the Council. They include: A (Mathematical and Physics): D. A. Fowler, Professor of Astrophysics in the Imperial College of Science and Technology. B (Chemistry): Dr. J. F. Thorpe, Professor in Organic Chemistry in the Imperial College of Science and Technology. F (Economics): Sir Josiah Stamp, formerly secretary, and now director of Nobel Industries, Ltd. K (Botany): Professor W. Bateson, Director of the John Innes Horticultural Institution. L (Education): Sir Thomas Holland, Rector of the Imperial College of Science and Technology. M (Agriculture): Sir Daniel Hall, Chief Scientific Adviser to the Ministry of Agriculture. The President of the Engineering Section will be announced later.

ALLEN-LIVERSIDGE, LTD., announce that they have registered a company in Bombay as Allen-Liversidge (India), Ltd.

THE FRIDAY EVENING DISCOURSE at the Royal Institution on January 22 will be delivered by Sir William Bragg on "The Work of the Davy Faraday Research Laboratory."

TWO NEW DIRECTORS of Boots Pure Drug Co., Ltd., are Mr. A. L. Milne, who had been secretary of the company for many years and was relinquishing his position, and Mr. P. C. Brett.

MR. CHARLES E. GARDNER, chairman and director of W. Gardner and Sons (Gloucester), Ltd., millwrights and engineers, of Bristol Road, Gloucester, has been elected an alderman of that city.

SIR EDWARD BROTHERTON left Liverpool on the *Megantic* on Saturday, January 9, for Halifax and New York. He is proceeding on the *Megantic* from New York to the West Indies.

THE MARGAM COPPER WORKS, Port Talbot, idle since August, have been purchased by the Briton Ferry Steel Company, and it is understood work for 500 men will be resumed in a fortnight.

THE PURCHASE is reported, by a Manchester firm of dyers and bleachers, of the Waterbarn Mills, Stacksteads. The mills, which have been idle for two years, will, it is understood, be opened with new machinery as a bleaching and dye works.

AN ANTI-TOXIN for injection against tetanus was reported on by Dr. Roux, director of the Pasteur Institute before the French Academy of Sciences on Monday. It is understood to give permanent and complete immunity without causing any inconvenience.

AN ANONYMOUS GIFT OF £10,000 has been made to the appeal fund of the National Institute of Industrial Psychology. Employers and employees are united in the support of this organisation, which is concerned with the study of the human factor in industry.

AN EXPLOSION followed by a fire caused damage estimated at £6,000 at the Leyland and Birmingham Rubber Works at Leyland on Sunday. Two men were injured. Thirteen hundred people will be temporarily unemployed as a result.—An explosion seriously injured a boy at Hoghton, near Preston, on Monday. He struck a match to descend into a cellar, when there was a violent explosion of a keg containing 1 cwt. of calcium carbide.

THE BLINDNESS OF EMPLOYERS to the advantages of the co-partnership scheme was pointed out by Mr. D. Milne Watson, governor of the Gas Light and Coke Co., at a meeting of the Labour Co-partnership Association in London on Wednesday. The Gas Light and Coke Co., he said, introduced the scheme in 1909 and had now some 12,000 co-partnership shareholders, the workers having acquired £500,000 worth of the company's capital.

SEVERAL ARTIFICIAL SILK DEVELOPMENTS are reported. A company is being formed in Kirkcudbrightshire and will have the services of an authority on artificial silk manufacture.—In France there are now 19 factories producing in all 37·5 tons a day. All but one employ the viscose process only. None is using either the Chardonnet or the cuprammonium process.—A Leningrad factory is to be reorganised to produce 25,000 poods of artificial silk annually.

NEGRETTI AND ZAMBRA, London, have produced a neat case for clinical thermometers which incidentally overcomes a difficulty always experienced when using these instruments. Known as the "Easy Setter" case the metal holder can be spun rapidly on a central axis, and this movement takes the place of the usual vigorous hand shaking necessary to reset the thermometer before taking a second reading.

SUGAR BEET ENTERPRISE is progressing favourably. On Saturday, January 9, the directors of the Anglo-Scottish Sugar Beet Corporation, Ltd., invited about 200 shareholders and friends to inspect the Kidderminster factory. This factory is designed to deal with 1,000 tons of beet a day and at present some 500 tons are handled and about 60 tons of sugar made each day. The processes are continuous and complete in themselves, so that the raw beet is heated and refined sugar produced. Work will shortly be started at the new factory of the Central Sugar Co., Ltd., at Peterborough. The Dyer Co., of Cleveland, U.S.A., are the general contractors, but the bulk of the machinery and plant will be British made.

Obituary

MR. WILLIAM THOMAS PUGH, a member of the Court of the Salters Co. and Master of the Company in 1916, at Kingston on Wednesday.

DR. ERICH KRAUSE, director of the Wood Carbonisation Co., of Constance. With others he worked out a process for obtaining methyl alcohol from natural gas.

MR. FREDERICK H. WILKINSON, who until recently resided at Blackburn, where he carried on the chemical works at Oswaldtwistle, founded by his father, Mr. Benjamin Wilkinson.

MR. ANDREW FISHER M'CALLUM, of Claremont, Paisley, and J. and J. M'Callum, Laighpark Dyeworks, and a managing director of the British Cotton and Wool Dyers' Association, Ltd., Manchester, in his sixty-ninth year.

MR. WILLIAM HAMPSON, M.A., of Holland Park, a distinguished member of the Council of the Röntgen Society and a prominent student of chemistry in the interests of healing. He invented the Hampson radiometer for measuring the application of X-rays and the self-intensive air-liquefier now so widely used in laboratories.

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The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each

Abstracts of Complete Specifications

243,982. Evaporating Solutions in Vacuo, Method of. N. V. Nederlandsche Installatie, Maatschappij Therma, 36, Voldelstraat, Amsterdam, Holland, and A. O. H. Petersen 9, Dogenstrasse, Altona, Germany. Application date, May 1, 1925.

This method is particularly suitable for evaporating solutions of Epsom salts, Glauber salts, and potassium salts, by means of a condenser and an ejector pump. The vapour from a hot solution which has been evaporated in vacuo is condensed in a condenser by a minimum quantity of cooling liquid. The condensate is removed by an ejector pump which is operated by the cooling water or brine used for condensing the vapour.

243,990. Soluble Carbonates and Hydrates, Process for Producing. A. F. Meyerhofer, 10, Goethestrasse, Zurich, Switzerland. Application date, July 24, 1924. Addition to 219,971.

Specification No. 219,971 (see The Chemical Age, Vol. XI, p. 353) describes the production of soluble carbonates or hydroxides by the use of hydrofluosilicic acid salts, and in this invention other complex fluorides are employed. In an example, a mixture of sodium fluoride 80 kilos and calcium carbonate 100 kilos is stirred in 350 litres of water until conversion is complete. The insoluble calcium fluoride is filtered off, and the filtrate evaporated and calcined, yielding 100 kilos of sodium carbonate. The calcium fluoride is dissolved in weak hydrochloric acid with 117 kilos of common salt and heated with titanium fluoride to obtain sodium titanofluoride. The latter is heated to convert it into sodium fluoride and titanium fluoride, which are used again.

244,159. Accelerators and Intermediate Compounds for use in the Vulcanisation of Rubber, Manufacture of. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester, C. J. T. Cronshaw and W. J. S. Naunton, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, September 9, 1924.

Di-aryl-thio-ureas are prepared containing an alkylated-amino group in each of the aryl residues, and these thio ureas are desulphurised as described in Specification No. 223,410 (see The Chemical Age, Vol. XI, p. 530). Diaryl-guanidines are thus obtained containing an alkylated amino group in each of the aryl nuclei. These have an increased accelerating action compared with the diaryl guanidines. In an example, unsymmetrical dimethyl-or diethyl-paraphenylene-diamine are condensed with carbon bisulphide to obtain tetra-methyl or tetra-ethyl-diamino-diphenyl-thiourea, or monoethyl-*p*-toluylene diamine is similarly converted into diethyl-diamino-di-*p*-tolyl-thiourea. These thioureas are desulphurised, yielding tetramethyl-*p*-*p*-diamino-diphenyl-guanidine, and *p*-diethyl-diamino-meta-dimethyl-diphenyl-guanidine.

244,148. Cellulose Derivatives, Manufacture and Production of. J. O. Zdanowich, 36, St. James's Street, London, S.W.1. Application date, August 15, 1924.

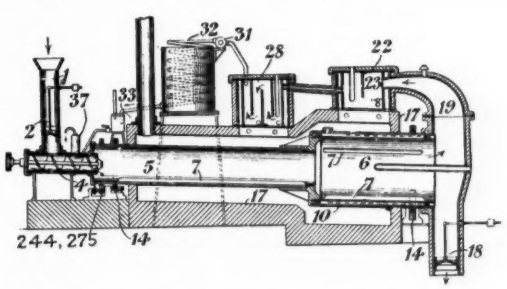
This is a method for the production of acetylated solutions or mixtures of cellulose acetates which can be converted directly into films, etc., without first precipitating the acetate, and then dissolving it by a process involving in the first stage of the acetylation the chlorination of an acetylation mixture leaving free chlorine in the solution. It is found that this chlorine can be employed to form a nascent condensing agent by the passage of sulphur dioxide into the mixture, for use in the second stage of the acetylation. A very small proportion of a strong condensing agent, *e.g.*, 0·01–0·1 per cent., may also be added. The first stage of the process is carried out as described in Specification No. 196,641 (see The Chemical Age, Vol. VIII, p. 598), until partial or complete disintegration of the cellulose takes place. Free chlorine remains in the solution, and sulphur dioxide in the proportion of 5 per cent. of the cellulose is passed into the mixture and about 0·01 per cent. of sulphuric acid is added. The sulphur dioxide may be replaced by sulphur trioxide or oxide of phosphorus. The acetylated solution is stabilised as described in Specification No. 200,186 (see The Chemical Age, Vol. IX, p. 155).

244,267. Dyeing Cellulose Acetate or Materials containing it. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester. W. H. Perkin, South Parks Road, Oxford, and C. Hollins, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, December 16, 1924.

It has been found that acetate silk may be dyed directly in a variety of shades by using certain anthraquinone derivatives with or without the use of a dispersing medium, these compounds being derived from amino-, diamino-, polyamino-anthraquinones or their substitution products, excluding sulphonated derivatives, by the process of complete acetylation followed by nitration. The products obtained may be hydrolysed or reduced. In an example, diacetyl-1 : 8-diamino-anthraquinone is dissolved in concentrated sulphuric acid and mono-nitrated at 5°–10° C., and the mono-nitro-diacetyl-diamino-anthraquinone is precipitated by pouring into water. This gives a brown shade on acetate silk. The mononitro compound may be treated with acetic acid and a solution of stannous chloride in concentrated hydrochloric acid, yielding diacetyl-triaminoanthraquinone which gives a crimson shade. The mononitro compound may be dissolved in concentrated sulphuric acid and stirred for three hours at 80°–90° C., when hydrolysis is complete. The nitrodiamino-anthraquinone gives a red shade on acetate silk. The 1 : 5- and 1 : 8-diacetyl-diamino-anthraquinones, which have no affinity for acetate silk, may be hydrolysed or reduced to obtain dyestuffs.

244,275. Distilling Oil Shale, Bituminous Coal, and the like to obtain Light Hydrocarbons, Process and Apparatus for. A. L. Mond, London. From American Shale Reduction Co., 115, Broadway, New York. Application date, December 22, 1924.

The carbonaceous material is heated without the introduction of steam to a temperature at which the volatile matter



is about to be driven off. The material is then subjected to a much higher temperature so that cracking takes place, and the unsaturated cracked vapours are hydrogenated to saturated hydrocarbons by means of hydrogen derived from steam generated from the moisture in the raw material.

The material is fed into a hopper 1 having a counter-weighted valve 2, and thence to a helical conveyor 4 which delivers it to a retort 5. The further end of the retort is enlarged to form a chamber 6 provided with a jacket 10 which may be filled with molten metal to heat the material when delivered to it. The retort is mounted on rollers 14 for rotation, and internal ribs 7 are provided to lift the material. The retort is mounted in a setting 17 and is externally heated. The material is heated to the point at which vapour is about to be liberated, *e.g.*, 750° F. for oil shale, and then passes into the chamber 6 which is maintained at 1,000–1,100° F. by its heating jacket. The residue is discharged through a valve 18, and the cracked vapour containing a large proportion of gasoline passes through a conduit 19 to a condenser 22. The hydro-

genation in the chamber 6 is facilitated by the catalytic action of the spent shale. The condenser 22 is provided with a baffle 23, and is open at the bottom and sides to the space 15 surrounding the retort. The temperature is maintained constant by means of a thermostat at a temperature sufficiently high to cause the cracking of the heavy paraffin fraction, *i.e.*, 740° F. The vapour then passes to another similar condenser 28, which is maintained at a lower temperature of about 620° F., at which the lubricating oil stock condenses. The vapour passes on through a pump 31 to a condenser 32 in which gasoline condenses, and then passes to a receiver 33 and filter 37. A modified construction of the retort is also described.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention: —221,802 (Naamlooze Vennootschap Philips' Gloeilampenfabrieken), relating to separation of zirconium and hafnium halogenides; see Vol. XI, p. 505; 233,669 (J. P. Bemberg Akt.-Ges.), relating to recovery of ammonia from waste waters in the cuprammonium process for making artificial filaments, see Vol. XIII, p. 71; 234,830 (T. R. Haglund), relating to production of aluminium oxide, see Vol. XIII, p. 133; 235,844 (New Jersey Zinc Co.), relating to manufacture of zinc oxide, see Vol. XIII, p. 201; 235,864 (Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler), relating to organic arsenical compounds, see Vol. XIII, p. 202; 238,172 (Koppers Co.), relating to purification of fuel gas, see Vol. XIII, p. 380.

International Specifications not yet Accepted

242,296. SYNTHETIC DRUGS. Farbenfabriken vorm. F. Bayer and Co., Leverkusen, near Cologne, Germany. International Convention date, October 29, 1924.

Thio bromine or its salts may be treated with chloromethyl ether to obtain 1-methoxy-methyl-3-7-dimethyl-xanthine. Double compounds of this salt can be formed with salts of organic acids, such as sodium benzoate and sodium salicylate.

242,306. DYES. A. Zinke, 30, Castellfeldgasse, Graz, Austria. International date, November 3, 1924.

Diaroyl-halogen-perylenes are treated with basic alkali or alkaline earth metal compounds at a high temperature in the presence of an organic solvent to obtain dyestuffs. In an example, dibenzoyl-dibrom-perylene is treated with powdered caustic potash in boiling aniline or with molten alkali to obtain a dyestuff which gives blue shades on cotton. In other examples, dichlor-perylene-benzoyl-chloride and aluminium chloride are heated with boiling carbon bisulphide; dibenzoyl-dichlorperylene is heated with solid caustic alkali in quinoline; dichlorperylene is heated with *p*-chlor-benzoyl-chloride and anhydrous aluminium chloride in boiling carbon bisulphide; di-*p*-chlor-benzoyl-dichlor-perylene is heated with caustic potash in boiling quinoline; dichlor-perylene is heated to boiling with *p*-toluic acid chloride, aluminium chloride, and carbon bisulphide, yielding a di-*p*-toluyl compound which is heated with powdered caustic potash in boiling quinoline; dichlor-perylene and *o* or *m*-toluic acid chloride is heated with aluminium chloride in boiling carbon bisulphide, and the intermediate product is heated with solid caustic potash in quinoline; dichlor-perylene is heated with α-naphthoyl chloride and aluminium chloride in carbon bisulphide, and the intermediate product heated with caustic potash and quinoline.

242,590. TARTRATES. Chemische Fabrik Dr. H. Stoltzenberg, Müggenberger Schleuse, Hamburg, Germany. International Convention date, November 5, 1924.

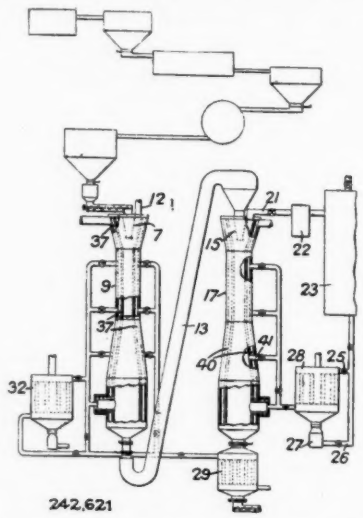
The salts of fumaric or maleic acids are halogenated and the products heated in the presence of a carbonate or bicarbonate to obtain tartrates. This calcium carbonate may be added to a suspension of fumaric acid and bromine slowly added, and the mixture heated with a reflux condenser to obtain the tartrate. Alternatively, fumaric acid can be neutralised with calcium carbonate and treated with chlorine, and a further quantity of calcium carbonate added and the mixture boiled. In another example, the halogenated salt of fumaric or maleic acid is separated and treated with sodium bicarbonate in an autoclave in the presence of a small proportion of bronze as a catalyst. The mixture is saturated with carbon dioxide and then heated.

242,620. DYES. Badische Anilin and Soda Fabrik, Ludwigshafen-on-Rhine, Germany. International Convention date, November 7, 1924.

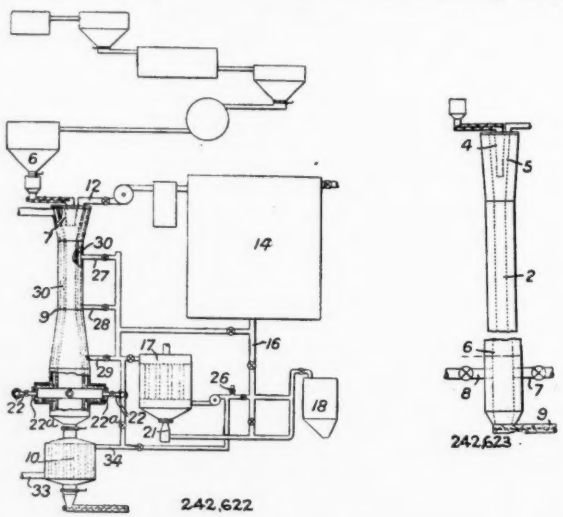
Benzanthrone Bzl-thioethers or substitution derivatives having a free 2-position are treated with alkaline condensing agents with or without inert diluents to obtain isodibenzanthrone dyes. In an example, benzanthrone Bzl-*p*-thiocresyl-ether or Bzl-Bzl[1]-benzanthronyl-sulphide may be heated with ethyl alcohol and caustic potash at 135°–145° C to obtain isodibenzanthrone practically free from dibenzanthrone. To obtain benzanthrone-Bzl-*p*-thio-cresyl-ether, Bzl-chlorbenzanthrone is heated with *p*-thiocresol and alcoholic potash; to obtain Bzl-Bzl[1]-benzanthronyl sulphide, benzanthrone-Bzl-mercaptan is heated with copper and naphthalene.

242,621-2-3. CARBONISING COAL. International Combustion Engineering Corporation, 43, Broad Street, New York. Assignees of W. Runge, 136, North Arlington Avenue, East Orange, N.J., U.S.A. International Convention date, November 6, 1924.

242,621. Pulverised coal is preheated by suspending it in air heated to 650° F., at which temperature the agglutinating properties of coal are destroyed. The fuel is then carbonised



by causing it to fall through a current of ascending combustible gas at 1,000° F. The powdered coal passes through a distributing device 7 into a retort 9, and is preheated by means



of air which is passed through a coke cooler 29, and if required a heat interchanger 32, to a jacket 37 surrounding the retort, and also into the bottom of the retort. The heated coal is

raised by a conveyor 13 to a distributor 15 at the top of the retort 17, and combustible gas is passed through a heat interchanger 28 and pipe 41 to the carbonising zone of the retort, and also to a jacket 40. The liberated gas is passed through a pipe 21 to a purifier 22 and gas holder 23, and thence to a heat interchanger at 25, and to a burner 27. The coke passes to the cooler 29.

242,622. This is a modification of the above process in which the pulverised coal passes downwards through hot gas which varies in temperature from 850° to 1,175° F. The gas is obtained by burning part of the fuel, or a combustible gas, at the bottom of the retort in a limited supply of air. The powdered coal passes through a hopper 6 and distributor 7 to the retort 9, and the carbonised residue passes to a cooler 10. The gas and vapour pass through a pipe 12 to a gas holder 14. The hot gas introduced at the bottom of the retort 9 may be drawn from the holder 14 through pipe 16 and heat interchanger 17, or it may be drawn from a gas producer 18. The heat interchanger may be heated by the burner 21, and air only may be drawn through it from the pipe 26. Combustible gas may be introduced into the jacket 30 and burnt there, and the air supply may be preheated by passing it through the coke cooler 10.

242,623. Powdered fuel is fed through a preheater 4 surrounded by a gas collecting space 5, to the central cylindrical part 2 of the retort. A limited supply of air is introduced through pipes 7, 8 and passes upwards through the reaction zone 6 in counter current to the descending fuel.

242,635. ELECTROLYTIC OXYGEN AND HYDROGEN. Montecatini Soc. Generale per l'Industria Mineraria ed Agricola, 35, Foro Bonaparte, Milan, Italy. Assignees of G. Fauser, 4, Via Barazzuolo, Novara, Italy. International Convention date, November 7, 1924.

Each electrode in an electrolytic cell consists of a pair of parallel plates spaced apart by indented portions which meet midway between the two plates. Evolution of gas produces an upward flow of the electrolyte outside the plates and a downward flow between them. The electrode is surrounded by an asbestos diaphragm.

LATEST NOTIFICATIONS.

245,421. Reduction of alumina. Metal Research Corporation. December 30, 1924.
245,422. Compositions for alloying molybdenum with other metals. Molybdenum Corporation of America. December 30, 1924.
245,430. Process for the production of phosphoric acid. Chemische Fabrik Griesheim Elektron. December 30, 1924.
245,456. Manufacture of gelatine. Kodak, Ltd. June 6, 1924.
245,469. Process for treating cellulose derivatives. I. G. Farbenindustrie Akt.-Ges. January 2, 1925.
245,473. Process for the manufacture of aluminium ethylate. Chemische Fabrik auf Actien (vorm. E. Schering). January 3, 1925.

Specifications Accepted with Date of Application

227,084. Hydrocarbon oils, Materials for refining. R. Cross. December 31, 1923.
228,128. Cement in blast furnaces, Process for the production of. Gewerkschaft Lutz III. January 21, 1924.
231,837. Acetylation of cellulose, Process for. Soc. Chimique des Usines du Rhône. April 2, 1924.
234,074. Magnesium, Process for extracting or refining. B. E. F. Rhodin, May 13, 1924.
234,138. Hypophosphites, phosphites and phosphoric acid, Process for preparation of. Firm of E. Merck. May 17, 1924.
242,296. New Pharmaceutical compound, Manufacture of. Farbenfabriken vorm. F. Bayer and Co. October 29, 1924.
244,830. Organic compounds, Manufacture of. J. Y. Johnson. (*Badische Anilin und Soda Fabrik.*) September 24, 1924.
244,837. Carbonisation of fuel, Apparatus for. S. R. Illingworth, Illingworth Carbonisation Co., Ltd., R. Dempster and Sons, Ltd., and H. J. Toogood. September 25, 1924. Addition to 22,705/1924.
244,875. Cracking and separating mineral oils. V. L. Oil Processes, Ltd., and O. D. Lucas. October 31, 1924.
244,895. Carbonyl Compounds, Manufacture and production of. J. Y. Johnson. (*Badische Anilin und Soda Fabrik.*) November 26, 1924.
244,936. Dyeing cellulose acetate products, Process of. L. B. Holliday and Co., Ltd., and A. Young. January 24, 1925.
244,951. Chemical product resulting from a reaction between barium and a metal of the sulphur group. C. Dickens. February 20, 1925.
244,980. Abietic acid, Process for the purification of, and for producing pure abietates. G. H. Dupont. April 24, 1925.

Applications for Patents

Aktiebolaget Separator. Centrifugal separators. 404. January 6. (Sweden, January 1, 1925.)
Aktieselskapet Krystal. Process for refining or separating soluble substances. 327. January 5.
American Cellulose and Chemical Manufacturing Co., Ltd., and British Celanese, Ltd. Treatment of materials containing cellulose derivatives. 695. January 9.
Barclay, S. F., and Mather and Platt Ltd. Chemical fire-extinguishers. 32,738. December 28.
British Synthetics, Ltd., and Higgins, E. B. Manufacture of arylides and dye intermediates. 515. January 7.
Chemische Fabrik auf Actien, vorm. E. Schering. Manufacture of aluminium ethylate. 229. January 4. (Germany, January 3, 1925.)
Coley, H. E. Manufacture of zinc. 170. January 4.
Coley, H. E. Apparatus for manufacture of zinc, etc. 391. January 6.
Coley, H. E. Manufacture of thorium, cerium, etc. 392. January 6.
Coley, H. E. Extraction of gold from arsenical ores. 393. January 6.
Coley, H. E. Manufacture of barium sulphide and barium hydroxide. 505. January 7.
Coley, H. E. Reduction of carbonates or bicarbonates. 506. January 7.
Coley, H. E. Reduction of sulphates. 507. January 7.
Courtaulds, Ltd., Glover, W. H., and Topham, C. F. Production of artificial silk. 514. January 7.
Gammay, H. Production of camphene from pinene hydrochloride. 559. January 7.
Gammay, H. Production of camphor from isoborneol. 560. January 7.
Griffiths, A., and Hampton, C. R. Centrifugal separators. 615. January 8.
Hardman, E. Manufacture of bituminous, etc., emulsions. 644. January 8.
Heyl, G. E. Distillation and transport of oils and tar. 493. January 7.
I. G. Farbenindustrie Akt.-Ges. Production of phosphoric acid. 299. January 5. (Germany, January 17, 1925.)
I. G. Farbenindustrie Akt.-Ges. Production of potash glass. 580. January 8. (Germany, January 8, 1925.)
I. G. Farbenindustrie Akt.-Ges. Process of dyeing cellulose esters, etc. 632. January 8. (Germany, January 9, 1925.)
I. G. Farbenindustrie Akt.-Ges. Manufacture of alkylated aromatic sulphonic acids. 696. January 9. (Germany, January 30, 1925.)
Igranic Electric Co., Ltd. (Cutler-Hammer Manufacturing Co.) Automatic-reclosing circuit-breaker systems. 32,345. December 22.
Jeremiassen, F. Process for refining or separating soluble substances. 327. January 5.
Johnson, J. Y., and I. G. Farbenindustrie Akt.-Ges. Manufacture of fertilisers. 512, 513. January 7.
Kodak, Ltd. Manufacture of gelatine. 32,980. December 31. (United States, June 6, 1924.)
Levy, L. A. Manufacture of cellulose acetate. 431. January 6.
Magrath, H. J. Treatment of water for softening, purifying, etc. 102. January 2.
Manji, D. R., and Paton, F. J. Manufacture of pectin products. 32,664. December 28.
Pontoppidan, C. Production of cement mixed with gypsum. 205. January 4.
Siemens and Halske Akt.-Ges. Production of artificial manures. 301. January 5. (Germany, January 9, 1925.)
Soc. Chimique des Usines du Rhône. Preparation of ethylidene diacetate. 411. January 6. (France, September 18, 1925.)
Soc. of Chemical Industry in Basle. Manufacture of condensation products of urea, etc., and formaldehyde. 235. January 4. (Switzerland, January 17, 1925.)
Soc. of Chemical Industry in Basle. Process of converting into soluble form insoluble condensation products of urea, etc., and formaldehyde. 236. January 4. (Switzerland, January 17, 1925.)
Steffen, C. Processes for obtaining tricalcium saccharate. 177. January 4. (Austria, November 17, 1925.)
Surtees, R. Machines for emulsifying, mixing, or grinding materials. 310. January 5.
Whatmough, W. H. Manufacture of lake colours, etc. 32,301. December 22.
Whatmough, W. H. Manufacture of carbon black pigments, etc. 32,304. December 22.
Wilton, T. O. Treatment of effluent liquor. 410. January 6.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £40 per ton, Powder, £42 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BLEACHING POWDER.—Spot, £9 10s. d/d; Contract, £8 10s. d/d, 4 ton lots.

BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.

BORAX, COMMERCIAL.—Crystal, £25 per ton. Powder, £26 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORATE (SOLID).—£5 12s. 6d. to £5 17s. 6d. per ton d/d, carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 64 O.P.—Industrial, 2s. 5d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3⅞d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.

SODIUM CHLORATE.—3d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—4¾d. per lb. Crude 60's, 1s. 2d. to 1s. 5d. Little demand.

ACID CRESYLIC 97/99.—1s. 7d. to 1s. 9d. per gall. Pale, 95%, 1s. 5d. to 1s. 9d. per gall. Dark, 1s. 4d. to 1s. 8d. per gall. Good demand.

ANTHRACENE PASTE 40%.—3d. per unit per cwt.—Nominal price. No business.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Good inquiry. Unstrained, 7d. per gall.

BENZOL.—Crude 65's, 1s. 1d. to 1s. 3d. per gall., ex works in tank wagons. Standard Motor, 1s. 8d. to 1s. 10d. per gall., ex works in tank wagons. Pure, 1s. 11d. to 2s. 3d. per gall., ex works in tank wagons.

TOLUOL.—90%, 1s. 8d. to 1s. 9d. per gall. Pure, 1s. 11d. to 2s. 3d. per gall.

XYLOL COMMERCIAL.—1s. 11d. to 2s. 3d. per gall. Pure, 2s. 2d. to 3s. 3d. per gall.

CREOSOTE.—Cresylic, 20/24%, 8½d. per gall. Market very quiet. Standard specification, 6d. to 7d. per gall.; middle oil, heavy, 6½d. per gall. Market steady.

NAPHTHA.—Crude 1s. per gall. Solvent 90/160, 1s. 5d. to 1s. 8d. per gall. Fair business. Solvent 90/190, 1s. 1d. to 1s. 2d. per gall. Moderate demand.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £3 10s. to £5 5s. per ton. Whizzed or hot pressed, £5 to £6.

NAPHTHALENE.—Crystals and Flaked, £11 to £13 per ton, according to districts.

PITCH.—Medium soft, 55s. to 60s. per ton, according to district. Market active.

PYRIDINE.—90/160, 17s. 9d. to 20s. per gall. Firmer. Heavy, 10s. per gall. More inquiry.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated.

ACETIC ANHYDRIDE 95%.—1s. 7d. per lb.

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—7s. per lb. 100%.

ACID BENZOIC.—1s. 9d. per lb.

ACID GAMMA.—9s. per lb.

ACID H.—3s. 6d. per lb. 100% basis d/d.

ACID NAPHTHIONIC.—2s. 2d. per lb. 100% basis d/d.

ACID NEVILLE AND WINTHER.—4s. 9d. to 4s. 10d. per lb. 100% basis d/d.

ACID SULPHANILIC.—9d. per lb. 100% basis d/d.

ALUMINIUM CHLORIDE, ANHYDROUS.—10d. per lb. d/d.

ANILINE OIL.—7d. to 7½d. per lb. naked at works.

ANILINE SALTS.—7d. to 8d. per lb. naked at works.

ANTIMONY PENTACHLORIDE.—1s. per lb. d/d.

BENZALDEHYDE.—2s. 1½d. per lb. Good home inquiry.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZYL CHLORIDE 95%.—1s. 1d. per lb.

p-CHLORPHENOL.—4s. 3d. per lb. d/d.

p-CHLORANILINE.—3s. per lb. 100% basis.

o-CRESOL 29/31° C.—3d. per lb. Demand quiet.

m-CRESOL 98/100%.—2s. 1d. to 2s. 3d. per lb. Demand moderate.

p-CRESOL 32/34° C.—2s. 1d. to 2s. 3d. per lb. Demand moderate.

DICHLORANILINE.—2s. 3d. per lb.

DICHLORANILINE S. ACID.—2s. 3d. per lb. 100% basis.

DIETHYLANILINE.—4s. 3d. per lb. d/d., packages extra, returnable.

DIMETHYLANILINE.—2s. per lb. d/d. Drums extra.

DINITROBENZENE.—9d. per lb. naked at works.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROPHENOL.—1s. 1d. per lb., 100% basis.

DINITROTOLUENE.—48/50° C. 8d. to 9d. per lb. naked at works. 66/68° C. 10d. per lb. naked at works.

DIPHENYLANILINE.—2s. 10d. per lb. d/d.

G. SALT.—2s. 2d. per lb. 100% basis d/d.

a-NAPHTHOL.—2s. per lb. d/d. Fair home inquiry.

B-NAPHTHOL.—11d. to 1s. per lb. d/d. Fair home inquiry.

a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d. Fair home inquiry.

B-NAPHTHYLAMINE.—3s. 9d. per lb. d/d. Fair home inquiry.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. 6d. per lb. d/d.

p-NITRANILINE.—1s. 10d. per lb. d/d. Fair home inquiry.

NITROBENZENE.—5½d. per lb. naked at works. Good home inquiry.

o-NITROCHLORBENZOL.—2s. 3d. per lb. 100% basis d/d.

NITRONAPHTHALENE.—10d. per lb. d/d.

p-NITROPHENOL.—1s. 9d. per lb. 100% basis d/d.

p-NITRO-*o*-AMIDO-PHENOL.—4s. 6d. per lb. 100% basis.

m-PHENYLENE DIAMINE.—4s. per lb. d/d.

p-PHENYLENE DIAMINE.—9s. 9d. per lb. 100% basis d/d.

R. SALT.—2s. 4d. per lb. 100% basis d/d.

SODIUM NAPHTHIONATE.—1s. 9d. per lb. 100% basis d/d.

o-TOLUIDINE.—9d. per lb. naked at works.

p-TOLUIDINE.—2s. 2d. per lb. naked at works.

m-TOLUYLENE DIAMINE.—4s. per lb. d/d.

m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £7 10s. Quiet market. Grey, £15 10s. per ton. Better inquiry. Liquor, 9d. per gall. 32° Tw.

ACETONE.—£81 per ton.

CHARCOAL.—£7 5s. to £9 per ton, according to grade and locality. Demand fair.

IRON LIQUOR.—1s. 6d. per gall. 32° Tw. 1s. 2d. per gall., 24° Tw.

RED LIQUOR.—10d. per gall. 16° Tw.

WOOD CREOSOTE.—2s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 10d. per gall. 60% O.P. Solvent, 4s. 6d. per gall. 40% O.P. Very quiet.

WOOD TAR.—£3 to £4 10s. per ton, according to grade.

BROWN SUGAR OF LEAD.—£42 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 5d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—2s. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£50 to £55 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5½d. to 6½d. per lb.

LAMP BLACK.—£35 per ton, barrels free.
LEAD HYPOSULPHITE.—9d. per lb.
LITHOPONE, 30%.—£22 10s. per ton.
MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton f.o.r. London.
SULPHUR.—£9 to £11 per ton, according to quality.
SULPHUR CHLORIDE.—4d. per lb., carboys extra.
SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.
THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.
THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.
VERMILION, PALE OR DEEP.—5s. 3d. per lb.
ZINC SULPHIDE.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, 80% B.P.—£39 per ton ex wharf London in glass containers.
ACID, ACETYL SALICYLIC.—2s. 6d. to 2s. 7d. per lb. Keen competition continuing. Good demand.
ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity.
ACID, BORIC B.P.—Crystal, £46 per ton; Powder, £50 per ton. Carriage paid any station in Great Britain, in ton lots.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—1s. 4d. per lb., less 5%. Unsettled.
ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
ACID, PYROGALLIC, CRYSTALS.—5s. 3d. per lb. Resublimed, 7s. 6d.
ACID, SALICYLIC.—1s. 3½d. to 1s. 5½d. per lb. Technical.—10½d. to 11d. per lb.
ACID, TANNIC B.P.—2s. 10d. per lb.
ACID, TARTARIC.—1s. 0½d. per lb., less 5%. Market firm.
AMIDOL.—6s. 6d. per lb., d/d.
ACETANILIDE.—1s. 7d. to 1s. 8d. per lb. for quantities.
AMIDOPYRIN.—12s. 6d. per lb.
AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.
AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.
ATROPINE SULPHATE.—11s. per oz. for English make.
BARBITONE.—10s. per lb.
BENZONAPHTHOL.—3s. 3d. per lb. spot.
BISMUTH CARBONATE.—15s. 6d. to 17s. 6d. per lb.
BISMUTH CITRATE.—12s. 9d. to 14s. 9d. per lb.
BISMUTH SALICYLATE.—12s. 6d. to 14s. 6d. per lb.
BISMUTH SUBNITRATE.—13s. to 15s. per lb. according to quantity.
BORAX B.P.—Crystal, £29; Powder, £30 per ton. Carriage paid any station in Great Britain, in ton lots.
BROMIDES.—Potassium, 1s. 9d. to 1s. 11d. per lb.; sodium, 2s. to 2s. 2d. per lb.; ammonium, 2s. 3d. to 2s. 5d. per lb., all spot.
CALCIUM LACTATE.—1s. 4d. to 1s. 6d. Market firmer.
CHLORAL HYDRATE.—3s. 5d. to 3s. 6d. per lb., duty paid.
CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
FORMALDEHYDE.—£41 per ton, in barrels ex wharf.
GLYCEROPHOSPHATES.—Fair business passing. Calcium, soluble and citrate free, 7s. per lb.; iron, 8s. 9d. per lb.; magnesium, 9s. per lb.; potassium, 50%, 3s. 6d. per lb.; sodium, 60%, 2s. 6d. per lb.
GUAIACOL CARBONATE.—7s. per lb.
HEXAMINE.—2s. 4d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 8d. per gallon f.o.r. makers' works, naked.
HYDROQUINONE.—4s. 4½d. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
IRON AMMONIUM CITRATE B.P.—2s. to 2s. 3d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 1d. to 2s. 4d. per lb.
MAGNESIUM CARBONATE.—Light Commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light Commercial, £67 10s. per ton, less 2½%, price reduced; Heavy Commercial, £23 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.
MENTHOL.—A.B.R. recrystallised B.P., 31s. 6d. net per lb., Synthetic, 20s. to 25s. per lb., according to quality. English make.
MERCURIALS.—Red oxide, 5s. 2d. to 5s. 4d. per lb.; Corrosive sublimate, 3s. 9d. to 3s. 11d. per lb.; white precipitate, 4s. 6d. to 4s. 8d. per lb.; Calomel, 4s. to 4s. 2d. per lb. Market flat.
METHYL SALICYLATE.—1s. 7d. per lb.
METHYL SULPHONAL.—16s. 9d. per lb.
METOL.—9s. per lb. British make.
PARAFORMALDEHYDE.—1s. 11d. for 100% powder.
PARALDEHYDE.—1s. 4d. per lb.
PHENACETIN.—4s. to 4s. 3d. per lb.
PHENAZONE.—6s. to 6s. 3d. per lb. Spot lower than forward price.
PHENOLPHTHALEIN.—4s. to 4s. 3d. per lb. Supply exceeds demand.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—80s. per cwt., less 2½% for ton lots. Market very firm.
POTASSIUM CITRATE.—1s. 11d. to 2s. 2d. per lb.
POTASSIUM FERRICYANIDE.—1s. 9d. per lb. in cwt. lots. Quiet.
POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity. Steady market.
POTASSIUM METABISULPHITE.—7½d. per lb., 1-cwt. kegs included, f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 7½d. per lb., spot. slightly easier.
QUININE SULPHATE.—2s. 3d. to 2s. 4d. per oz., in 100 oz. tins. Steady market.
RESORCIN.—3s. 9d. per lb. In fair quantities.
SACCHARIN.—51s. 5d. to 53s. 8d. per lb., according to quantity. Limited inquiry.
SALOL.—3s. per lb.
SILVER PROTEINATE.—12s. per lb. for satisfactory product light in colour.
SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.
SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923. 1s. 11d. to 2s. 2d. per lb., according to quantity.
SODIUM FERROCYANIDE.—4d. per lb. carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£14 to £15 per ton, according to quantity, d/d consignee's station in 1-cwt. kegs.
SODIUM METABISULPHITE CRYSTALS.—37s. 6d. to 60s. per cwt., net cash, according to quantity.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—75s. to 80s. per cwt., according to quantity.
SODIUM SALICYLATE.—Powder, 1s. 10d. to 2s. per lb. Crystal, 1s. 11d. to 2s. 1d. per lb. Very heavy demand.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.
SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.
SULPHONAL.—12s. per lb. Limited demand.
TARTAR EMETIC, B.P.—Crystal or Powder, 1s 8d. to 1s. 9d. per lb.
THYMOL.—12s. to 13s. 9d. per lb. Strong demand.

Perfumery Chemicals

ACETOPHENONE.—9s. per lb.
AUBEPINE (EX ANETHOL).—10s. per lb.
AMYL ACETATE.—3s. per lb.
AMYL BUTYRATE.—6s. 6d. per lb.
AMYL SALICYLATE.—3s. 3d. per lb.
ANETHOL (M.P. 21/22° C.).—6s. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. 4d. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—2s. 4d. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 9d. per lb.
BENZYL BENZOATE.—2s. 9d. per lb.
CINNAMIC ALDEHYDE NATURAL.—16s. 9d. per lb.
COUMARIN.—11s. 9d. per lb.
CITRONELLOL.—16s. per lb.
CITRAL.—9s. per lb.
ETHYL CINNAMATE.—9s. per lb.
ETHYL PHTHALATE.—3s. per lb.
EUGENOL.—10s. per lb.
GERANIOL (PALMAROSA).—22s. 6d. per lb.
GERANIOL.—7s. to 16s. per lb.
HELIOTROPINE.—6s. per lb.
ISO EUGENOL.—14s. 6d. per lb.
LINALOL EX BOIS DE ROSE.—18s. per lb.
LINALYL ACETATE.—18s. per lb.
METHYL ANTHRANILATE.—9s. 3d. per lb.
METHYL BENZOATE.—6s. per lb.
MUSK KETONE.—35s. per lb.
MUSK XYLOL.—5s. 9d. per lb.
NEROLIN.—4s. per lb.
PHENYL ETHYL ACETATE.—14s. per lb.
PHENYL ETHYL ALCOHOL.—10s. per lb.
RHODINOL.—34s. 6d. per lb.
SAFROL.—1s. 4d. per lb.
TERPINEOL.—1s. 6d. per lb.
VANILLIN.—21s. 6d. to 23s. 6d. per lb. Good demand.

Essential Oils

ALMOND OIL.—12s. 6d. per lb.
ANISE OIL.—3s. 7d. per lb.
BERGAMOT OIL.—28s. per lb.
BOURBON GERANIUM OIL.—13s. per lb.
CAMPHOR OIL.—60s. per cwt.
CANANGA OIL, JAVA.—11s. 3d. per lb.
CINNAMON OIL, LEAF.—5d. per oz.
CASSIA OIL, 80/85%.—10s. per lb.
CITRONELLA OIL.—Java, 85/90%, 3s. 6d. Ceylon, 2s. 6d. per lb.
CLOVE OIL.—7s. 3d. per lb.
EUCALYPTUS OIL, 70/75%.—1s. 10d. per lb.
LAVENDER OIL.—French 38/40%, Esters, 24s. per lb.
LEMON OIL.—7s. 9d. per lb.
LEMONGRASS OIL.—4s. 9d. per lb.
ORANGE OIL, SWEET.—11s. 3d. per lb.
OTTO OF ROSE OIL.—Bulgarian, 60s. per oz. Anatolian, 35s. per oz.
PALMA ROSA OIL.—13s. per lb.
PEPPERMINT OIL.—Wayne County, 125s. per lb. Japanese, 18s. 9d. per lb.
PETITGRAIN OIL.—9s. 6d. per lb.
SANDAL WOOD OIL.—Mysore, 26s. per lb. Australian, 18s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, January 15, 1926.

THERE is a satisfactory tone in the market and the output of chemicals is quite good for early January. Changes in value are few and far between, but on the whole prices are firm. Export trade is quiet, although there are more inquiries about.

General Chemicals

ACETONE is a very firm market. There is practically no stock. Price £81 to £82 per ton.
ACID ACETIC is in good demand. Price unchanged.
ACID FORMIC is a firm market and a satisfactory turnover is reported. Price £50 to £51 per ton.
ACID LACTIC is unchanged at £43 per ton for 50 per cent. by weight.
ACID OXALIC is firm at 3⅞d. to 4d. per lb. Demand at the moment is only fair.
ACID TARTARIC is quiet and uninteresting.
ALUMINA SULPHATE is a firmly active market at about £5 15s. per ton for 17-18 per cent.
AMMONIUM CHLORIDE continues to sag, to-day's figure being about £18 per ton.
ARSENIC is very quiet. Price nominally £15-£16 per ton.
BARIUM CHLORIDE is firm and advancing. Price £10 per ton.
BLEACHING POWDER is unchanged at £9 per ton.
CREAM OF TARTAR is very scarce for delivery during the next few months. Price £76 per ton and seems likely to go higher.
EPSOM SALTS are firm at £5 15s. to £6 per ton.
FORMALDEHYDE is a slow market. Price £43 to £44 per ton.
LEAD ACETATE is in fair demand at about £44 per ton for white and £1 less for brown.
LIME ACETATE is firm at £18 to £19 per ton.
LITHOPONE is unchanged at £19 to £20 per ton.
METHYL ALCOHOL is in good demand at £48 per ton.
METHYL ACETONE is rather firmer at £53 to £55 per ton.
POTASSIUM CARBONATE AND CAUSTIC are unchanged.
POTASSIUM CHLORATE is unchanged at 4¼d. to 4½d. per lb.
POTASSIUM PERMANGANATE is a fair market at 7¾d. to 8d. per lb.
POTASSIUM PRUSSIATE is firm. Price has advanced to 7¾d. to 8d. per lb.
SODIUM ACETATE is very scarce. Price is now £19 10s. per ton to £20 per ton.
SODIUM BICHROMATE is unchanged.
SODIUM NITRITE is unchanged at £22 10s. per ton.
SODIUM PRUSSIATE is firm. Makers are expecting higher prices.
SODIUM SULPHIDE is rather firmer consequent upon the increase in transit charges.
ZINC SULPHATE is unchanged.

Coal Tar Products

The market generally for coal tar products is steady.
90% BENZOL remains firm at 1s. 10d. per gallon on rails.
PURE BENZOL is quoted at 2s. 1d. to 2s. 2d. per gallon on rails.
CREOSOTE OIL is unchanged from last week at 6¼d. per gallon on rails in the North, while the price in London is 7½d. per gallon.
CRESYLIC ACID is very firm at 1s. 10d. to 1s. 11d. per gallon, on rails for the pale quality 97/99%, while the dark quality 95/97% is quoted at 1s. 6d. to 1s. 7d. per gallon on rails.
SOLVENT NAPHTHA is steady at 1s. 5½d. to 1s. 6½d. per gallon on rails.
HEAVY NAPHTHA is quoted at about 1s. 2d. per gallon on rails.
NAPHTHALENES are unchanged. The lower grades are worth from £4 to £4 10s. per ton, the 76/78 quality about £6 per ton, and the 74/76 quality about £5 10s. per ton.
PITCH remains firm with good demand and prices still have an upward tendency. To-day's value is 57s. 6d. to 60s. per ton f.o.b. U.K. ports.

Nitrogen Products Market

Export.—The demand for sulphate of ammonia from the Continent still remains quiet. There has, however, been considerable inquiry from the Far East. Any real livening up in the market is not anticipated until the end of the month, when consumers commence covering their requirements. British producers are holding firm at £12 17s. 6d. per ton f.o.b. U.K. port, double bags, for prompt shipment with higher prices for shipment up to the end of April.

Home.—Since the announcement of prices for delivery up to the end of May, merchants have begun to cover their spring requirements and it is anticipated that the season will be a heavy one unless February is a very wet month. Total sales up to time of going to press are about 10,000 tons in excess of those of last year.

Nitrate of Soda.—The market remains quiet, prices still fluctuating around £11 5s. per ton c.i.f. chief European ports for prompt arrival.

Latest Oil Prices

LONDON.—LINSEED OIL barely steady. Spot, £33; January, £31 5s.; January-April, £31 7s. 6d.; May-August and September-December, £31 10s. RAPE OIL quiet. Crude crushed, spot, £48 10s.; technical refined, £51 10s. COTTON OIL steady. Refined common edible, £42; Egyptian, crude, £35; deodorised, £44. TURPENTINE quiet and 9d. to 1s. per cwt. down. American, spot, 65s. 3d.; and February-April, 65s. 9d.

Australia's Chemical Requirements

THE latest official figures, issued in December, indicate the markets for exports to Australia by a table of comparing imports with the value of the home productions. For instance, there would appear to be a wide market for oils and greases where import values are £6,524,740, against production value of £1,731,946. For soaps, etc., the production is valued at no less than £2,915,030 and imports are limited to £96,956. There is limited scope for lime, cement, asphalt, etc. (imports, £334,902), as Australia produces these goods to the value of £3,723,911. Sugar refining is largely a home industry, showing figures of £11,034,304, against £64,793 imports. Chemicals and drugs offer excellent opportunities, for in the trade year these were imported to the value of no less than £2,349,132. Import figures for fertilisers and for paints and varnishes were £889,582 and £635,814 respectively.

German Nitrogen Prices

THE German Nitrogen Syndicate has issued a statement, in which it is stated that to-day nitrogen is about 25 per cent. cheaper than before the war, while Chile saltpetre is some 50 per cent. dearer. Following the wish of agriculturists, the syndicate last April fixed prices for nitrogen for a year, thus running a great risk. They have also increased the discount for cash payments from 1½ per cent. to 4½ per cent., and have allowed the agriculturists to pay for their nitrogen out of the proceeds of the following harvest. The average price for the present business year is 1s. 0½d. for one kilogramme (2·2 lb.) nitrogen, from which, however, freight, discount, and insurance have to be deducted, so that the producers actually only receive 10½d. These are the home prices; the export prices are higher.

A protest is being organised by a special committee in Ardrossan against the installation on a site near the North Shore of eight tanks of about 18,000 tons of benzine and petrol for the Shell-Mex Co.

Sir B. Edward Cunard, Bt., of Wonsford, director of the Chloride Electrical Storage Co., left £13,123 (net personalty, £12,638), and Mr. G. Elliott, of Brooklands, Cheshire, dyeworks manager, left £24,699 (net personalty, £24,483).

The organisation of several chemical fertiliser factories in Southern Italy and near islands, is being urged by the Italian Technical Agriculture Committee to the Government. Supplies are short and demands are increasing.

The Institute of Metals increased its membership last year from 1,571 to 1,692, despite the acute depression in the engineering and metal trades. A ballot for the election of members and student members will take place on February 24.

A fish meal and fertiliser plant is to be established in Vancouver Island and pilchards and dog fish will be treated. The principal product, pilchard oil, has a high iodine content, and is used in paints, varnishes, soap making and other industries.

A protective tariff for the Tasmanian carbide industry is now proposed by the Premier, who is to approach the Commonwealth Government. The Electrona works, it is stated, is in a position to produce the whole of Australia's carbide requirements. Oversea producers can land this product in the Commonwealth at present at £26 per ton. It is believed the State Government will continue to run the industry if satisfactory tariff arrangements are made.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, January 15, 1926.

THE heavy chemical market has been quite active during the past week, good inquiry being received both for home and export. There are no changes in prices of any importance to record.

Industrial Chemicals

ACID ACETIC, 98/100%.—Quoted £55 to £67 per ton, according to quantity and packing, c.i.f. U.K. port; 80% pure, £40 to £41 per ton; 80% technical, £38 to £39 per ton, packed in casks, c.i.f. U.K. ports.

ACID BORIC.—Crystal, granulated, or small flaked, £40 per ton. Powdered, £42 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Rather better inquiry. Now quoted 4½d. per lb., delivered or f.o.b. U.K. port.

ACID CITRIC, B.P. CRYSTALS.—Unchanged at about 1s. 3⅝d. per lb., less 5% ex wharf, in moderate demand.

ACID FORMIC, 85%.—On offer from the continent at about £49 15s. per ton, ex wharf, prompt shipment. Spot material available at about £51 per ton, ex store.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC, 80°.—Remains unchanged at £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—Rather cheaper quotations from the continent. Now quoted 3½d. per lb., ex wharf. Spot material unchanged at about 3⅝d. per lb., ex store.

ACID SULPHURIC, 144°.—£3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Unchanged at about 11⅜d. to 11½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18% IRON FREE.—On offer from the continent at about £5 10s. per ton, c.i.f. U.K. ports. Spot material available at £6 5s. per ton, ex store.

ALUM, LUMP POTASH.—Quoted £8 per ton, c.i.f. U.K. ports. Prompt shipment from the continent. Spot material available at about £9 5s. per ton, ex store. Powdered quality on offer from the continent at about £7 10s. per ton, c.i.f. U.K. ports.

AMMONIA ANHYDROUS.—In usual steady demand, price quoted 1s. 4½d. per lb., ex station.

AMMONIA CARBONATE.—Lump £37 per ton; powdered, £39 per ton; packed in 5 cwt. casks, delivered U.K. ports.

AMMONIA LIQUID, 880°.—In usual steady demand, and price unchanged at 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £26 to £27 per ton ,ex station. On offer from the continent at about £22 10s. per ton, c.i.f. U.K. ports. Fine white crystals quoted £18 15s. per ton, c.i.f. U.K. ports. Prompt shipment from the continent.

ARSENIC, REFINED WHITE CORNISH.—Price remains unchanged at about £17 15s. per ton, ex wharf. Prompt despatch from works. Spot material quoted £19 per ton, ex store.

BARIUM CHLORIDE.—Large white crystals now quoted £9 10s. per ton, ex store, spot delivery. Continental quotations higher. Large white crystals quoted £8 per ton, c.i.f. U.K. ports. Fine white crystals £7 15s. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—English material quoted at £9 10s. per ton ex station. Contracts 20s. per ton less. On offer from the continent at about £7 15s. per ton, c.i.f. U.K. ports.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £24 10s. per ton; crystals, £25 per ton; powdered, £26 per ton. Carriage paid U.K. stations.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, carriage paid U.K. stations. Continental rather dearer, at about £3 15s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—In moderate demand for export. Now quoted £3 17s. 6d. per ton, f.o.b. U.K. ports.

COPPER SULPHATE.—In good demand for export, and price for English material unchanged at £24 per ton, f.o.b. U.K. ports. Continental quoted £22 per ton, ex wharf.

FORMALDEHYDE, 40%.—In moderate demand, and spot material unchanged at about £40 per ton, ex store. Offered for prompt shipment at £38 per ton, c.i.f. U.K. ports.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental on offer at about £3 per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material quoted £42 5s. per ton, ex store.

LEAD, WHITE.—Unchanged at about £42 per ton, ex store. Spot delivery.

LEAD ACETATE.—Rather cheaper quotations from the continent. Refined white crystals now on offer at about £41 5s. per ton, c.i.f. U.K. ports. Spot material available at about £44 5s. per ton, ex store.

MAGNESITE, GROUND CALCINED.—In moderate demand and price unchanged at about £8 15s. per ton ex station.

POTASH, CAUSTIC, 88/92%.—Syndicate prices vary from £25 10s. to £28 15s. per ton, c.i.f. U.K. ports, according to quantity and destination. Spot material available at about £29 per ton, ex store.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE.—96/98% quality quoted £25 10s. per ton, ex wharf, early delivery. Spot material available at about £26 10s. per ton, ex store; 90/92% quality quoted £22 10s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 99/100%.—Continental powdered material quoted £29 10s. per ton, c.i.f. U.K. ports. Crystals about £2 per ton extra.

POTASSIUM NITRATE, SALTPETRE.—Spot material now available at about £26 per ton, ex store. Quoted £23 15s. per ton, c.i.f. U.K. ports. Prompt shipment from the continent.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Spot material quoted 8d. per lb., ex store. Offered for early delivery at 7½d. per lb., ex wharf.

POTASSIUM PRUSSIATE, YELLOW.—In moderate demand. Now quoted 7⅝d. per lb., ex store. Offered for prompt shipment from the continent at 7½d. per lb., ex wharf.

SODA CAUSTIC.—76/77%, £17 10s. per ton; 70/72%, £16 2s. 6d. per ton; broken, 60%, £16 12s. 6d. per ton; powdered, 98/99%, £20 17s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts, 20s. per ton less.

SODIUM ACETATE.—On offer at about £18 5s. per ton, ex store, spot delivery. Quoted £17 15s. per ton, c.i.f. U.K. ports, prompt shipment.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—English price unchanged at 3½d. per lb. delivered.

SODIUM CARBONATE.—Soda Crystals, £5 to £5 5s. per ton, ex quay or station; powdered or pea quality, £1 7s. 6d. per ton more; alkali, 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture, quoted £9 per ton, ex station. Minimum 4-ton lots. Pea crystals, £14 5s. per ton, ex station. Continental commercial quality offered at £9 per ton, ex store.

SODIUM NITRATE.—Quoted £13 per ton, ex store; 95/98% refined quality, 7s. 6d. per ton extra.

SODIUM NITRITE 100%.—Quoted £24 per ton, ex store. Offered from the Continent about £22 5s. per ton c.i.f. U.K. ports.

SODIUM PRUSSIATE, YELLOW.—Still in good demand. Quoted 4⅜d. per lb., ex store. On offer from the Continent at a fraction less.

SODIUM SULPHATE, SALTCAKE.—Price for home comsumption, £3 10s. per ton, ex works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE.—60/65% solid, £13 5s. per ton; broken, £14 5s. per ton; flake, £15 5s. per ton; crystals 31/34%, £8 12s. 6d. per ton. All delivered buyers' works U.K. Minimum 5-ton lots with slight reduction for contracts. 60/62% solid quality offered from the Continent at about £10 10s. per ton c.i.f. U.K. ports. Broken, £1 per ton more. Crystals 30/32%, £7 10s. per ton c.i.f. U.K. ports.

SULPHUR.—Flowers, £11; Roll, £9 15s.; Rock, £9 15s.; Ground, £9 10s. per ton, ex store, spot delivery. Prices nominal.

ZINC CHLORIDE.—British material, 95/98%. Quoted about £24 per ton f.o.b. U.K. ports. 98/100% solid on offer from the Continent at about £22 10s. per ton c.i.f. U.K. ports. Powdered about 20s. per ton extra.

ZINC SULPHATE.—Of Continental manufacture on offer at about £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

H. ACID.—3s. 3d.–3s. 6d. Some Home inquiries.

BETA NAPHTHOL.—11d.–1s. Some Home inquiries.

DIMETHYLANILINE.—1s. 11d. to 2s. Fair Home inquiries.

PARANITRANILINE.—1s. 9d. to 1s. 10d. Fair Home inquiries.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, January 15, 1926.

Buying interest in heavy chemicals on the Manchester market during the present week has been on a moderate scale, and largely on spot or early delivery account, though it must be said that forward commitments have not by any means been neglected. Values have been steady generally. The immediate effects of the decision further to curtail working hours in the American section of the Lancashire cotton textile industry have not been favourable, though the step may prove ultimately to be the shortest way to better conditions in the industry.

Heavy Chemicals

Business in sulphide of sodium is still restricted, though prices are not much altered, 60-65 per cent. concentrated solid being quoted at £11 10s. to £11 15s. per ton and commercial material at round £9 10s. Only a very limited trade is being done in saltcake and values are on the easy side at £3 per ton. Glauber salts are in quiet demand at about £3 5s. per ton. Bleaching powder is in moderate request at the reduced rate of £8 10s. per ton. Acetate of soda meets with a fair amount of inquiry and prices are maintained at £18 to £18 10s. per ton. The demand for chlorate of soda is fair and prices steady at about 3d. per lb. Phosphate of soda attracts only limited attention at £12 to £12 10s. per ton. A quietly steady demand for caustic soda for both branches of trade is still being met with at from £15 2s. 6d. per ton for 60 per cent. strength to £17 10s. for 76-77 per cent. material. Soda crystals are fairly active at the recent level of £5 5s. per ton. Hyposulphite of soda is still on the quiet side, though quotations are unaltered, photographic quality offering at £14 to £14 10s. per ton and commercial at round £10. Bichromate of soda is in moderate request at 3¼d. per lb. Alkali is firm and meets with a fair amount of inquiry at £6 15s. per ton. Prussiate of soda is still quoted at 4d. to 4¼d. per lb. Bicarbonate of soda is quiet but steady at about £10 10s. per ton.

Caustic potash is only in moderate demand but values are steady at round £29 per ton for 90 per cent. strength. Carbonate of potash is being called for in fair quantities at £25 10s. to £26 per ton for 96-98 per cent. material. Yellow prussiate of potash is well maintained at 7⅛d. to 7¼d. per lb. Bichromate of potash is in quiet request and prices are steady at 4½d. per lb. Permanganate of potash is rather slow at 7¼d. to 7½d. per lb. for B.P. quality and about 5¾d. for commercial. Chlorate of potash is still on offer at about 4d. per lb. but the demand is not particularly active.

Arsenic shows little or no improvement so far as volume of business is concerned and prices are easy; white powdered, Cornish makes, is quoted at about £14 per ton on rails. Sulphate of copper is also slow though unaltered in price at £24 to £24 5s. per ton. Nitrate of lead is steady and in quiet demand at £40 to £41 per ton. Acetate of lead is in fair request at £44 to £45 per ton for white and £40 for brown. Grey acetate of lime is firm and in moderate inquiry at about £16 10s. per ton, with brown rather easy at £7 10s. Epsom salts are still quoted at round £3 10s. per ton. Magnesium sulphate, B.P. quality, is on offer at £4 10s.

Acids and Tar Products

The acids are slow generally, though values are not much changed since last report. Oxalic acid is rather quiet at 3¾d. per lb. Acetic acid is fairly steady at £37 per ton for 80 per cent. commercial quality and about £67 for glacial. Tartaric acid is on the easy side at 11½d. per lb., and citric at 1s. 3d. to 1s. 3¼d.

Not much business has been done in the coal-tar products, though fair sales of pitch have been made for shipment to the Continent at firm prices, varying from 55s. to 57s. 6d. per ton. Creosote oil keeps steady at 6¼d. to 6½d. per gallon. Carbolic acid is very slow at 4¼d. to 4½d. per lb. for crystals, with crude more or less nominal at 1s. 4d. per gallon. Crude naphthalene is on offer from £4 5s. per ton and refined at about £13 10s. Solvent naphtha is only in moderate request at 1s. 5½d. per gallon.

The Late Professor Lefroy's Preparations

A meeting of the creditors of Disinfectants and General Products, Ltd., 10, Hatton Yard, Hatton Garden, London, was held on Friday, January 8, in London. No statement of affairs was submitted, but the liquidator stated that the creditors amounted to £1,295 13s. 6d., while the assets were insufficient to meet the claims of the preferential creditors, amounting to £95 2s. 5d. The debentures were for £370, and were created in October, 1924. The liabilities included cash creditors for £717, while the bank was scheduled for £335 13s. 2d., but they were guaranteed. It was stated that the company was incorporated in March, 1924, to carry on the business of disinfectant and chemical manufacturers. The company came to an arangement with the late Professor H. Maxwell Lefroy in May, 1924, whereby the company acquired various formulæ from the professor and a fair amount of export and home trade was done with various solutions made up from different formulæ. In May, 1925, a preparation known as Rentokil Fly Liquid was placed on the market. It was stated that the preparation was guaranteed to be perfectly harmless to foodstuffs, but it was found that the temperature of this country was too low to give effect to the preparation, and the line had to be withdrawn. The liquidator referred to Professor Lefroy's fatal accident in October, 1925, and said that, in the opinion of one of the directors. had the Professor lived the present position would not have arisen.

After some discussion a resolution was passed confirming the voluntary liquidation of the company, with Mr. G. Gradon as liquidator.

The Need for Research in Road Materials

Dr. Percy E. Spielman, F.I.C., in an article in *Roads and Road Construction*, pleads the urgent necessity for roadway research. "It is becoming," he says, "increasingly necessary for laboratory work to be the essential preliminary, the concurrent assistant, and the trustworthy prophet of actual construction." Recent excellent work has been published in America on the effect of various fillers on the stability of sand-bitumen mixtures. The work is of such value for immediate application that it is astonishing that it was not done ten or more years ago. "At the same time, however," says Dr. Spielman, "the reason for the difference in effect, how far this depends on the fineness of grinding, shape of particle, nature of surface, and surface tension, will require much careful research." In a letter on "Resiliency in Roads," he says that in the case of asphalt roads much of the resilient nature must be attributed to the innumerable tiny air pockets and voids which are formed during the spreading and tamping of such surfaces.

Three Classes of Methylated Spirits

The Commissioners of Customs and Excise have issued new regulations concerning methylated spirits (other than power methylated spirits). These have been formulated after representations that the inclusion of pyridine in the spirits produced a product injurious to the skin in external applications. The new regulations provide for three classes of methylated spirits—"industrial methylated spirits," in which, by volume, to every 95 parts of alcohol of a certain strength there are five parts of wood naphtha; "industrial methylated spirits (pyridinised)," consisting of the foregoing with one-half of one part of crude pyridine to every 100 parts of the volume of the mixture; and "mineralised methylated spirits"—the ordinary heating composition—containing 90 parts of the alcohol, 9½ of wood naphtha, one-half part of crude pyridine, and to every 100 gallons of the mixture three-eighths of one gallon of mineral naphtha or petroleum oil, and not less than one-fortieth of an ounce by weight of powdered methyl violet. The regulations also control the distribution of non-pyridinised spirits.

Flame-proofing of Artificial Silk

Neocellon, Ltd., whose flame-proofed paper is already well known, announce that a new flame-proofing solution has been brought out especially for use on artificial silk. This solution, it is stated, has no effect on the tensile strength or colour of the material. It does not crystallise out or produce stiffening, and the flame-proofing properties of silk so treated are practically permanent.

Company News

RECKITT AND SONS, LTD.—The directors announce a quarterly dividend of 9d. per share on the ordinary shares.

BROKEN HILL SOUTH.—A dividend at the rate of 1s. 6d. and a bonus of 2s. have been declared, payable on February 16.

CANADA CEMENT CO.—A quarterly dividend of 1½ per cent. has been declared on the common stock, payable on January 16.

CANADA EXPLOSIVES.—A dividend of 1¾ per cent. has been declared for the quarter ended December 31 last on the 7 per cent. cumulative preferred shares, payable on January 15.

BOOTS PURE DRUG CO., LTD.—At an extraordinary general meeting of the shareholders held in Nottingham on Tuesday, a resolution increasing the capital to £2,900,000 by the creation of 500,000 new ordinary shares of £1 each was carried unanimously.

DISTILLERS CO.—In addition to declaring a dividend on the preference shares, the directors announce an interim dividend for the current year on the ordinary shares of 1s. 6d. per share, less tax, which is equal to 7½ per cent. actual, less tax, on the present paid-up ordinary share capital.

Tariff Changes

GENERAL.—A review of the tariff changes for the whole year of 1925 is published in the *Board of Trade Journal* for January 7.

BELGIUM.—Certificates of origin are still required when the following goods are imported into Belgium: hydrogen and oxygen, sulphurous acid and carbonic acid liquefied or compressed; acetylene, compressed; ammonia liquefied by pressure; chrome alum, chrome green, mountain green, Brunswick green, Bremen green, Frisian green, Schweinfurt green and mineral pigments with copper base, not specified (in the tariff); carbonate of lead; apparatus for vaporising, heating, distilling and the like, for all industrial purposes.

Germany's Fertiliser Trade Improving

GERMANY'S trade in fertiliser materials, according to the latest report by Mr. W. A. Foote, the United States Consul at Hamburg, is increasing rapidly, domestic consumption expanding and exports of potash and nitrogenous fertilisers getting back to the pre-war level. During the first eight months of this year, Germany imported 919,621 tons of fertilisers, compared with 486,073 tons in the same period of 1924, only 1,403,272 tons were imported during the whole of 1913. Basic slag from France, Belgium, the Saar Valley, and Luxemburg; phosphate rock from the United States, Algeria, and French Morocco; and fish meal from Norway and Great Britain are the principal items of import.

The growth of Germany's export trade in fertilisers in the first eight months of 1925 compared with the corresponding period of 1924 is shown in the following table:—

	Tons. 1924.	Tons. 1925.
Basic slag	2,034	43,206
Fishmeal and animal scraps	1,023	3,963
Superphosphates	13,797	31,797
Potash salts:		
Carnalite	15	430
Raw salts (12-17 per cent.)	124,486	231,452
Manure salts (18-42 per cent.)	185,222	560,346
Potassium sulphate	46,161	81,856
Magnesium-Potassium sulphate	14,466	27,946
Potassium chloride	55,489	140,173
Ammonium sulphate	46,712	123,936
Bone meal	622	12,859
Chilean saltpetre	5,413	8,923
Artificial guano and ground animal meal	143	4,392
Calcium nitrate and other fertilisers	4,147	25,213
Total	499,730	1,296,492

In addition to the fact that Germany is steadily regaining the fertiliser markets which were lost during the war, strenuous efforts are being made to enter and hold new markets which are gradually being developed in Australia, South Africa, and other parts of the world. It is also generally believed that agriculture in Russia will naturally look to Germany for fertilisers.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Mark can be lodged up to January 30, 1926

"VIULES."

464,482. For chemical substances prepared for use in medicine and pharmacy. Class 3. Boots Pure Drug Co., Ltd., 37, Station Street, Nottingham; merchants. November 19, 1925.

Opposition to the Registration of the following Trade Mark can be lodged up to February 6, 1926.

"NEOSTAM."

464,641. For chemical substances prepared for use in medicine and pharmacy. Class 3. The Wellcome Foundation, Ltd., 67, Holborn Viaduct, London, E.C.1; manufacturing chemists. November 24, 1925.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

WASHING SODA AND CAUSTIC SODA.—Tenders are invited by the Department of Posts and Telegraphs for 15 tons washing soda and 3 tons caustic soda. Forms from the undersigned, M. Dalton, Controller of Stores, Department of Posts and Telegraphs, Aldborough House, Dublin.

SOYA BEAN OIL, ETC.—A firm of agents in Valparaiso wishes to represent British manufacturers of soya bean oil, and exporters of calcium carbide. (Reference No. 75.)

SOAP.—A well-known European firm in Bombay wishes to represent British manufacturer of cheap household soap. (Reference No. 40.)

DRUGS, ETC.—A chemist in Budapest desires to act as agent for British firms manufacturing drugs. (Reference No. 60.)

FATS.—A firm of agents in Warsaw desires to represent for Poland British manufacturers of fats for soap making, talc, shellac, steel nib pens, insulin and other pharmaceutical preparations. (Reference No. 67.)

Remarkable Growth of Phosphate Industry

ACCORDING to an official report on the present economic conditions in Morocco, the phosphate industry continued to progress by leaps and bounds during 1924 and 1925. The output rose from 225,395 tons in 1923 to 461,582 in 1924; shipments from 190,505 tons in 1923 to 429,998 in 1924. Figures for the first half of 1925 show a large proportional increase on 1924, and the total export for 1925 is expected to be in the neighbourhood of 700,000 tons. The expansion of the European buying market admits of ready disposal of the increased output. France, Spain, and Holland were the principal buyers in 1924. Great Britain and Italy were also important customers, the former taking 35,000 tons. Moroccan phosphates, for which an average phosphate of lime content of 76 per cent. is claimed, compete rather with the high-grade American product than with the lower grades produced in Algeria and Tunis.

The financial statement of the Phosphates Administration for 1922 and 1923 gave rise to criticism on the ground that proper allowance was not made for first establishment and charges on capital. It was argued that in reality the enterprise was being worked at a loss. This criticism was met in the final balance sheet for 1924, in which the profit balance for the year of over 14,000,000 francs was completely assigned to capital charges, the wiping out of certain first establishment items, depreciation of material, and a considerable strengthening of the reserve fund. The superphosphate factory at Casablanca erected by the Kuhlmann group under an arrangement intended principally to provide for the needs of the Moroccan market started work in 1925.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

MIDLAND CELLULOSE CO., 192, Coventry Road, Birmingham, manufacturers. (C.C., 16/1/26.) £12 4s. 7d. November 26.

PREMIER CLEANSER CO., LTD., 118, Holborn, E.C., and Premier Works, Granville Road, Childs Hill, soap manufacturers. (C.C., 16/1/26.) £14 19s. 7d. December 3.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

CHAMBERS (JETHRO) AND CO., LTD., Sheffield, manufacturers of boiler composition, etc. (M., 16/1/26.) Registered December 24, £1,100 2nd debenture, to Branch Nominees, Ltd., 15, Bishopsgate, E.C.; charged on property at Sheffield, also general charge. *£1,200. July 13, 1925.

FOREST HUNTER, LTD., London, E.C., dealers in cleaning materials. (M., 16/1/26.) Registered December 30, £300 debenture, to S. C. Jones, 20, Water Lane, E.C., accountant; general charge.

VICLEY AND CO., LTD., Long Eaton, dyers and finishers. (M., 16/1/26.) Registered December 30, £1,100 mortgage, to building society; charged on 89 and 89A, Derby Road, Long Eaton.

Satisfactions

CHAMBERS (JETHRO) AND CO., LTD., Sheffield, manufacturers of boiler composition, etc. (M.S., 16/1/26.) Satisfaction registered December 24, £1,100, registered January 31, 1906.

CROSFIELD (JOSEPH) AND SONS, LTD., Warrington, soap manufacturers. (M.S., 16/1/26.) Satisfaction registered December 23, £287,810, part of amount outstanding July, 1908.

LEVER BROTHERS, LTD., Port Sunlight, soap manufacturers. (M.S., 16/1/26.) Satisfaction registered December 31, £127,734, part of amount registered April 13, 1921.

TIPPER (B. C.) AND SON, LTD., Birmingham, manufacturers of animal medicines. (M.S., 16/1/26.) Satisfaction registered December 31, £500, part of amount registered October 27, 1925.

London Gazette, &c.

Companies Winding Up Voluntarily

BURES DYE WORKS, LTD. (C.W.U.V., 16/1/26.) By Special Resolution, December 9, confirmed December 30. F. H. Harper, 27, Chancery Lane, London, W.C.2, incorporated accountant, appointed liquidator. Meeting of creditors at the offices of the liquidator at 3 p.m., on Monday, January 18. Creditors' claims by January 30.

DISINFECTANTS AND GENERAL PRODUCTS, LTD. (C.W.U.V., 16/1/26.) G. Gradon, incorporated accountant, 43, Gower Street, W.C.1, appointed liquidator, December 23.

WATSON FAIRBAIRN CHEMICAL CO., LTD. (C.W.U.V., 16/1/26.) By Special Resolution, December 18, confirmed January 5. H. M. Barton, chartered accountant, Alderman's House, Bishopsgate, London, E.C.2, appointed liquidator. (This notice is formal to comply with the Companies Act. All creditors have been or will be paid in full.)

Business Names Registered

The following (trading name and address, nature of business, date of commencement, and proprietors' names and addresses) have been registered under the Registration of Business Names Act.

MITRE PRESERVATIVE CO., 19, Russell Square, London, W.C.1, paint and preservative merchants. January 1, 1926. Albert Edward Harris, 49, Leyland Road, Lee, London, S.E.

ROBERTSON LABORATORIES, 6, Mill Lane, Lathom, Burscough Bridge, Ormskirk, manufacturing chemists and dealers in proprietary medicines. January 1, 1926. May Robertson Walsh (Miss), 4–6, Mill Lane.

New Companies Registered

ALLIED MAGNESITE INDUSTRIES (EUBOEA), Ltd. Registered January 6. To acquire magnesite mines and deposits; to crush, quarry, smelt, manipulate and prepare for market ores, metals, and mineral substances, to carry out chemical and other metallurgical operations, etc. Nominal capital, £200,000 in £1 shares.

GENOXIDE, LTD., Kingsway, Luton. Registered January 6. Chemical manufacturers and merchants, drysalters, etc. Nominal capital, £12,000 in £1 shares (10,000 ordinary and 2,000 deferred).

Alleged Infringement of Chemical Patent

ON Tuesday in the Chancery Division there was heard an action by Commercial Solvents, Ltd., of Featherstone Buildings, Holborn, for an injunction restraining the Synthetic Products Co., Ltd., of 50, City Road, London, from infringing their patent, No. 4,845 of 1915, for improvements in processes for the production of acetone and butyl alcohol. The defendants denied infringement and alleged invalidity on the ground of prior use and want of novelty and insufficiency of description in the patent specification. They also counterclaimed for revocation of the patent, alleging that it was obtained in fraud of the rights of Professor Fernbach, of the Pasteur Institute, Paris, and Mr. E. H. Strange, through whom the defendants claimed a beneficial interest.

Sir Arthur Colefax, K.C., for the plaintiffs, said the patent was granted to Dr. C. Weizmann, an eminent chemist. He dealt with the production by the agency of bacteria from the starch of maize or other grain of acetone and normal butyl alcohol. The process protected was very largely used by the Government, to whom Dr. Weizmann handed it over, for cordite production during the war. Upon the question of prior user Sir Arthur said the defendants never, in fact, produced either acetone or butyl alcohol by the agency of the bacteria which was isolated by Dr. Weizmann. The defence alleged that the information about it was confidentially imparted to Dr. Weizmann while he was engaged with Professor Fernbach, Mr. Strange, and Dr. Perkin, now Professor of Chemistry at Oxford, in investigating the possibility of making synthetic rubber, and that he used it improperly. There was an action, said counsel, pending against Dr. Weizmann by the present defendant and Strange and Graham, Ltd., for an injunction restraining him from disclosing alleged confidential information and for a declaration that he obtained certain patents as their trustee. On Wednesday Sir Arthur continued his statement. He agreed, in reply to the judge, that the question to be tried was really whether the process in dispute was based on the bacillus of Dr. Weizmann or Professor Fernbach. The hearing was adjourned.

Reported Production of Cheap Synthetic Shellac

AFTER considerable research, Mr. D. Robinson, a Headingley (Leeds) chemist, is reported to have produced a preparation that can be sold at approximately £180 per ton, and it will probably be called "Lacsyn." A company is being formed having premises in Kirkstall Road, Leeds. A year last November, it is understood, Professor Bellart, a Belgian professor at the Leeds University, died, leaving behind him a secret which Mr. Robinson subsequently worked on. The new preparation, it is claimed, possesses the advantage over shellac of being totally soluble in cold spirit.